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DETAILS OF
BUILDING
CONSTRUCTION

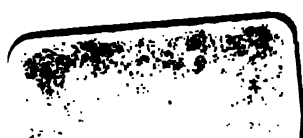
C. M. M. M.

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J. S. Duckworth .

DETAILS OF BUILDING CONSTRUCTION

BY
CLARENCE A. MARTIN
ASSISTANT PROFESSOR OF ARCHITECTURE
CORNELL UNIVERSITY



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1899

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BOSTON, MASS.

PREFACE.

THE author would have preferred to present this book to the public without a prefatory note, had not some explanations seemed necessary in order to prevent misunderstanding. The work is not the result of a deliberate attempt at book-making, undertaken with "malice prepense," but is the outcome of the efforts made by a teacher of architectural construction to present a part of his subject to his students. The drawings, consisting originally of rough sketches on large sheets of wrapping-paper, were at first used for temporary illustration only; but the results proved so satisfactory that it seemed best to study the work more carefully and to put it into more permanent form for class-room use.

This was undertaken some three years ago, still without thought of publication; and it was only after the first sixteen plates in blue-print form had been used for some time that their favorable reception by students, and by others who learned of them through students, suggested that they might prove useful to workers outside the college class-room. The revision and completion of the work were accordingly undertaken. Two or three of the original plates have been redrawn; but to redraw them all for the sake of uniformity and possible minor improvements would have involved an amount of labor not justified by the advantage gained, and would have necessitated a longer delay in publication than seemed advisable. In method of presentation, therefore, the work still shows to a considerable extent the various stages of its progress through a period of full three years. In other respects the attempt has been made, by means of careful revision in the light of the best criticism available, supplemented by continuous study and independent investigation, to present the best methods employed or recommended in present-day practice.

In scope the work limits itself to presenting only such details, principally in wood, as are in common use in domestic architecture and in smaller public buildings. The subject of framing has been entirely omitted, partly because it has been amply treated elsewhere, partly because it does not lend itself readily to the method of treatment here chosen. In the matter of design the author wishes to put in a disclaimer. Nothing is further from his intention than an attempt to dictate in a question of design, but it has been necessary to use design in order to show construction. Therefore, while every effort has been made to show only the good in design, it should be borne in mind that the book is a treatise not on that subject but on construction.

In the method of presentation, the inconsistency arising from the fact that the work was so long in a process of becoming, and that its final evolution into book form remained so long unforeseen, has already been mentioned. The exact character of this inconsistency may be seen by comparing the plates treating of windows with those treating of doors. In treating of windows one plate is devoted to a certain type of window, with the corresponding details, then another plate takes up a different type, and so on. When, however, the subject of doors is taken up, one plate is devoted to types of doors, another to details of frames, another to details of panels, etc. For this there was no remedy except the radical one of redrawing the plates; and the case did not seem to warrant recourse to measures so heroic, since it is, after all, an open question as to which method is the better.

The device of lettering the notes on the plates, instead of presenting them separately in the form of text, was of necessity a part of the original idea, which contemplated only separate plates; and when the work of revision was undertaken, it seemed wise to retain the scheme. It is hoped that the obvious advantage of having the notes on the plates in close juxtaposition to the drawings to which they refer will more than compensate for the disadvantages of an enforced brevity so severe as to be almost incompatible with good English, and of an appearance of dogmatism which the writer would have preferred, if possible, to avoid. That the notes must be read in conjunction with the study of the drawings, if the latter are to be fully comprehended, would seem to be a fact so obvious as to require no emphasis, had not some

of the criticisms received during the progress of the work revealed the fact that the not been neglected, despite the device used for securing their perusal.

In the matter of nomenclature care has been taken to use only such terms as are tioned by the authority of the best writers on architecture and building, and to use th curately, not in the hope of bringing order out of the chaos of architectural terminolog only in the hope of escaping the accusation of having worse confounded the present de ble confusion.

The drawings have been carefully prepared after a long, practical experience and wi aid of one of the best libraries in this country, supplemented by a large collection of w drawings from the offices of leading architects. No pains have been spared to free th far as possible from the taints of local practice; and while not all that is shown is unrese recommended, great care has been taken not to include anything that has not the autho good practice, and that may not fairly be called good construction when the element c is considered. Some cheap methods of construction have been shown and recommen good of their kind. Such, for instance, are the wood sills shown on Plate VI., which already been subjected to adverse criticism, but which it seemed best, after mature con tion, to retain. The wood sill in other than frame buildings has the same excuse for as has the shingle roof—it is cheap. It can of course be justified only on the score pense; but it has the sanction of good practice in sections of the country where cut s not easily and cheaply obtainable, it is painted and treated frankly as wood, and has sto test of time.

It has several times been suggested that the dimensions of parts be figured on the v details throughout the work, but to the author this has seemed entirely too dogmatic cedure. As the sturdy Pennsylvania farmer builds his house with 3 x 5-inch studs,— does not build of stone,—and does not think of extravagance, while the toiling dwc the cyclone regions of the West builds with 2 x 4-inch studs and wonders if he cannot space them 24 inches on centers, so the 2 ½ or 3-inch window-sill that is accepted as a of course in one section would strike terror to the heart of the builder in the thriftier where the 2-inch sill is an extravagance. In order to make the drawings, however, it w essary to show material of definite size and thickness, and the dimensions chosen for th ous parts have been made to represent as nearly as possible the average of good practic everything has been most carefully drawn to scale, the sizes used can be ascertained to a by simply measuring them on the drawings. The type window, Plate IV., has been fully figured, but beyond this it was felt that figured dimensions would seem to be an a at finality that would tend to restrict the liberty of choice and the exercise of individua ment on the part of designer and constructor, without which there can be no true pr If the work is to be used simply as a copy-book it must inevitably fail of its purpose, in the intent of the author has been much broader.

The few pages of advertising have been added to the work not so much for the sake revenue derived therefrom as with the hope that they may contribute to the actual v the subject-matter by calling attention to special devices or details that could not well cluded within the body of the book.

In order to avoid accusations of plagiarism, it may be well to mention that Mr. Kidder, in his work on Building Construction and Superintendence, has done the auth honor of using a part of the drawings relating to window details.

In conclusion the author wishes to express his sense of obligation toward all tho have so generously assisted him both directly and indirectly with their criticisms and s tions during the progress of the work, and his hope that the book will be found suffi helpful to elicit further criticism looking towards the improvement of future works character, whether by the author or by others.

C. A.

ITHACA, N. Y., August, 1899.

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- I.—DETAILS OF AN ORDINARY CELLAR WINDOW IN A STONE WALL.
- II.—DETAILS OF CELLAR WINDOW WITH SCREEN AND IRON GRILLE.
- III.—DETAILS OF CELLAR WINDOWS AND BASE COURSES FOR
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- XXVII.—DETAILS OF OPEN TIMBER CORNICES.
- XXVIII.—MISCELLANEOUS EXTERIOR DETAILS.
- XXIX.—WAINSCOTING AND ARCHITRAVES.
- XXX.—GENERAL INTERIOR FINISH.
- XXXI.—STAIR DETAILS.
- XXXII.—KITCHEN AND PANTRY DRESSERS.
- XXXIII.—FIREPLACE DETAILS.

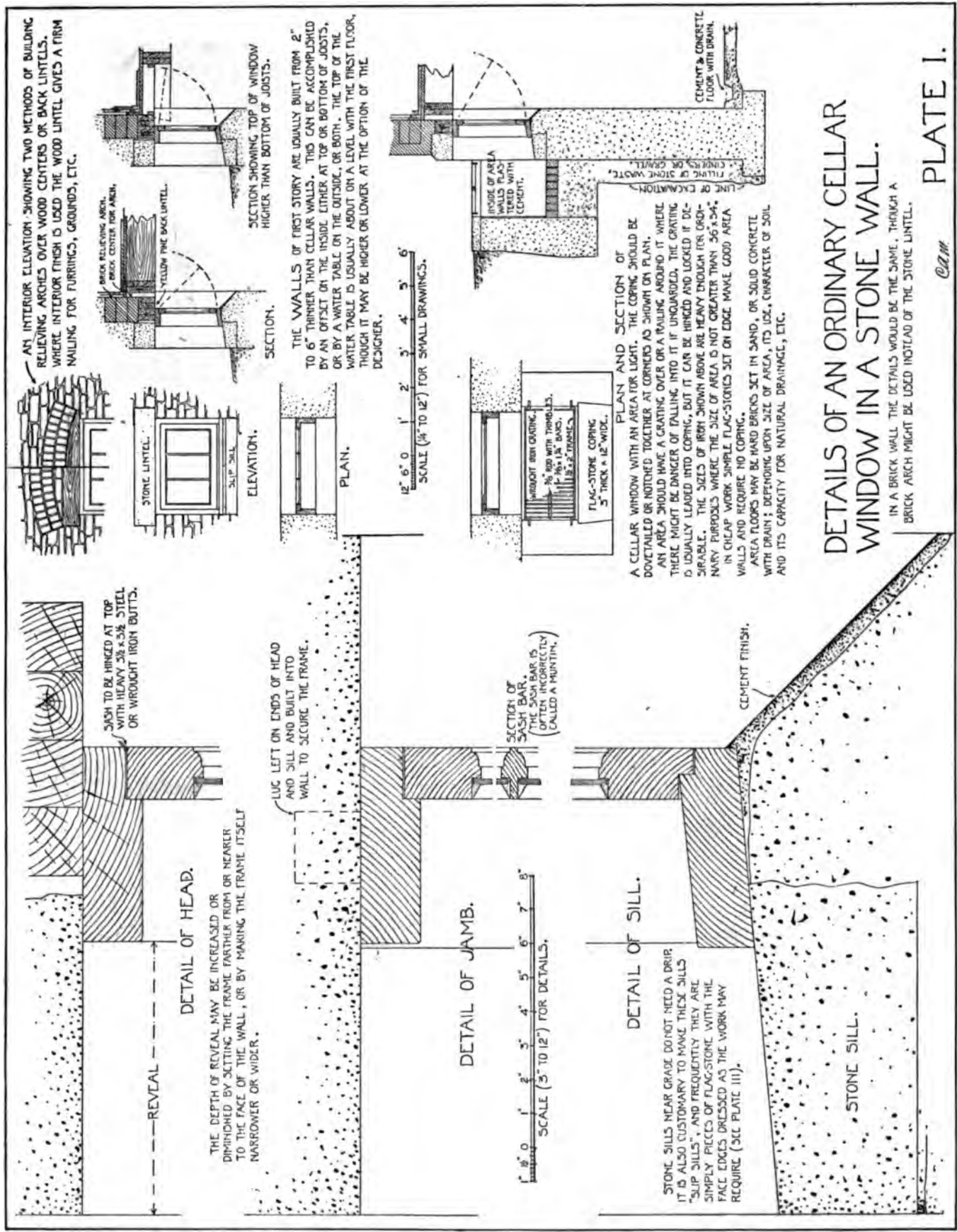
NOTE.

THE THICKNESS OF LUMBER FOR FINISHED WORK

The boards and planks used for sheathing, flooring, and the finer work about buildings measure in the rough 1 in., $1\frac{1}{4}$ in., $1\frac{1}{2}$ in., 2 ins., $2\frac{1}{2}$ ins., and 3 ins. in thickness. White pine and other lumber produced in the North is usually sawed to full thickness so that planing on both sides can ordinarily be done with a reduction of only $\frac{1}{8}$ in. in thickness, but lumber from the Southern markets, such as yellow pine, etc., is sawed so that it is necessary to count upon a reduction of $\frac{1}{4}$ in. in thickness for all lumber having a nominal thickness of 2 ins. or more. This gives the ordinary stock dimensions for the thickness of finished lumber as follows: $\frac{7}{8}$ in., $1\frac{1}{8}$ in., $1\frac{3}{8}$ in., $1\frac{3}{4}$ in. or $1\frac{7}{8}$ in., $2\frac{1}{4}$ ins. or $2\frac{3}{8}$ ins. and $2\frac{3}{4}$ ins. or $2\frac{7}{8}$ ins.

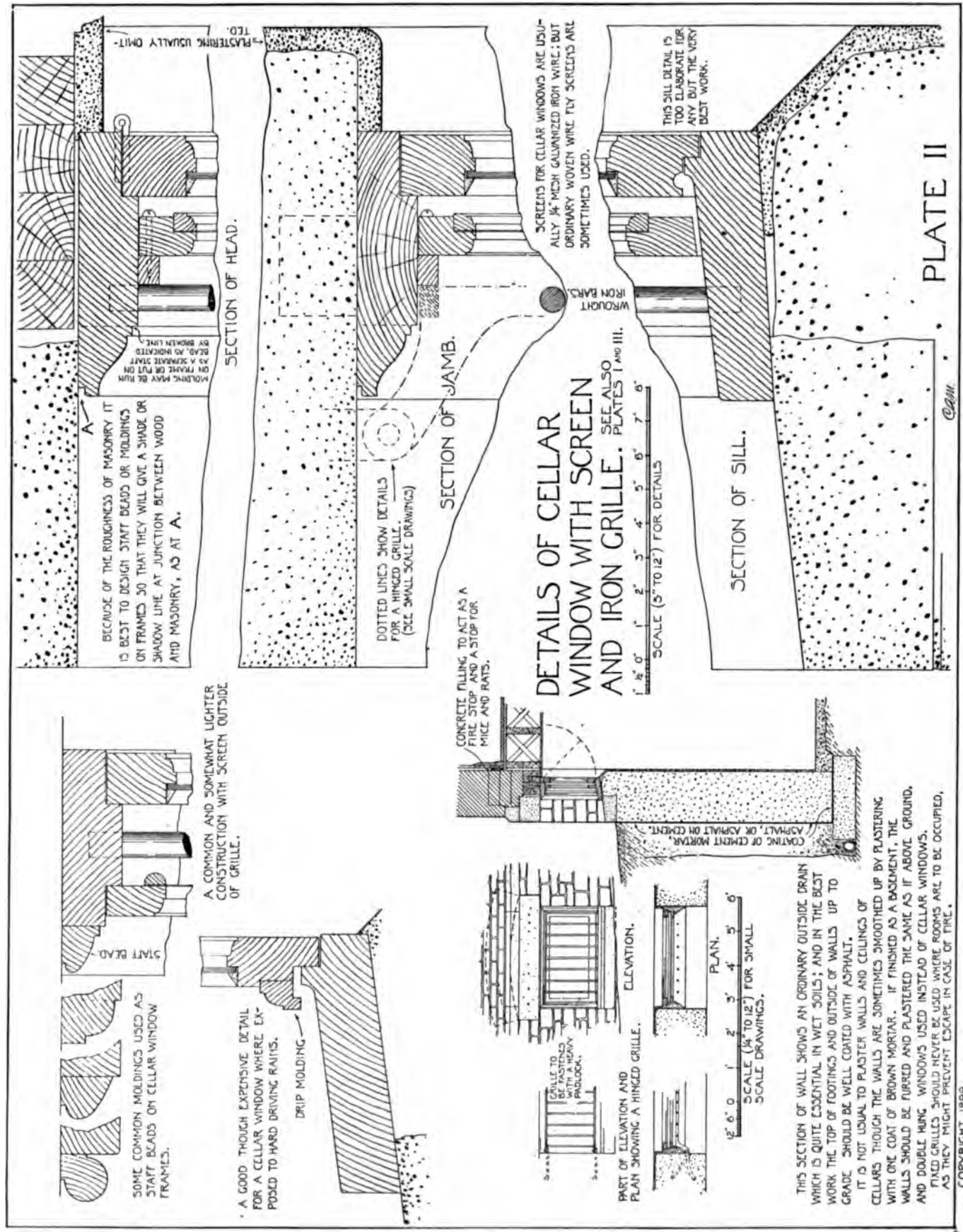
Finished lumber thinner than $\frac{7}{8}$ in. must be planed down or re-sawed from rough lumber 1 in. or more in thickness. Stock ceiling boards that are made for the market in large quantities are commonly $\frac{7}{8}$ in., $\frac{3}{4}$ in., $\frac{5}{8}$ in., $\frac{1}{2}$ in., and $\frac{3}{8}$ in. in thickness and the price gradually scaled down with the thickness so that the $\frac{3}{8}$ in. material is listed at about 60 per cent of the price of the $\frac{7}{8}$ in. material. For ordinary finishing, however, where the stock must be gotten out especially for the particular operation, there is little economy in using $\frac{3}{4}$ in., $\frac{5}{8}$ in. or $\frac{1}{2}$ in. material, as the quantity required for any one operation is usually so small that re-sawing cannot be done economically.

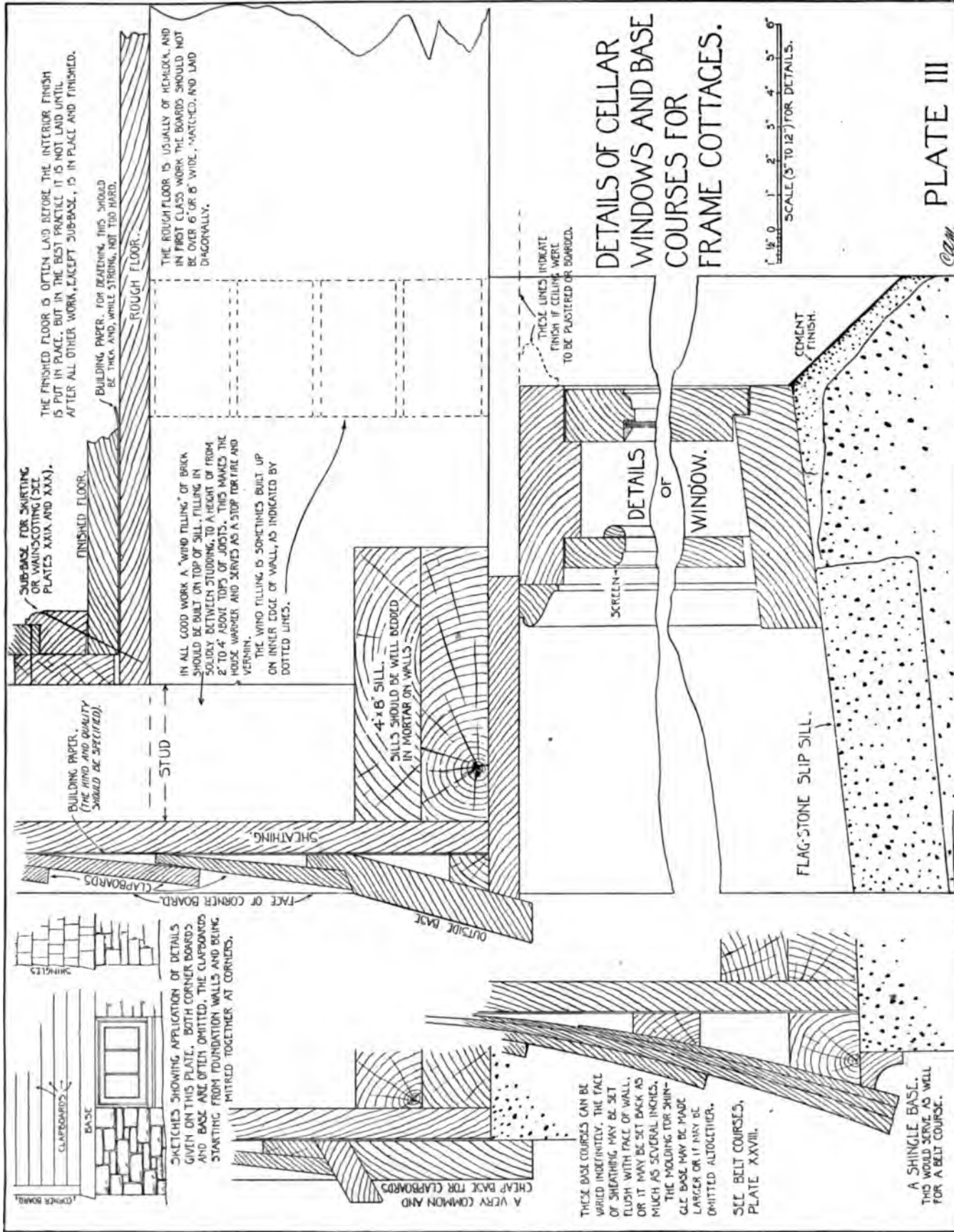
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DETAILS OF AN ORDINARY CELLAR WINDOW IN A STONE WALL.

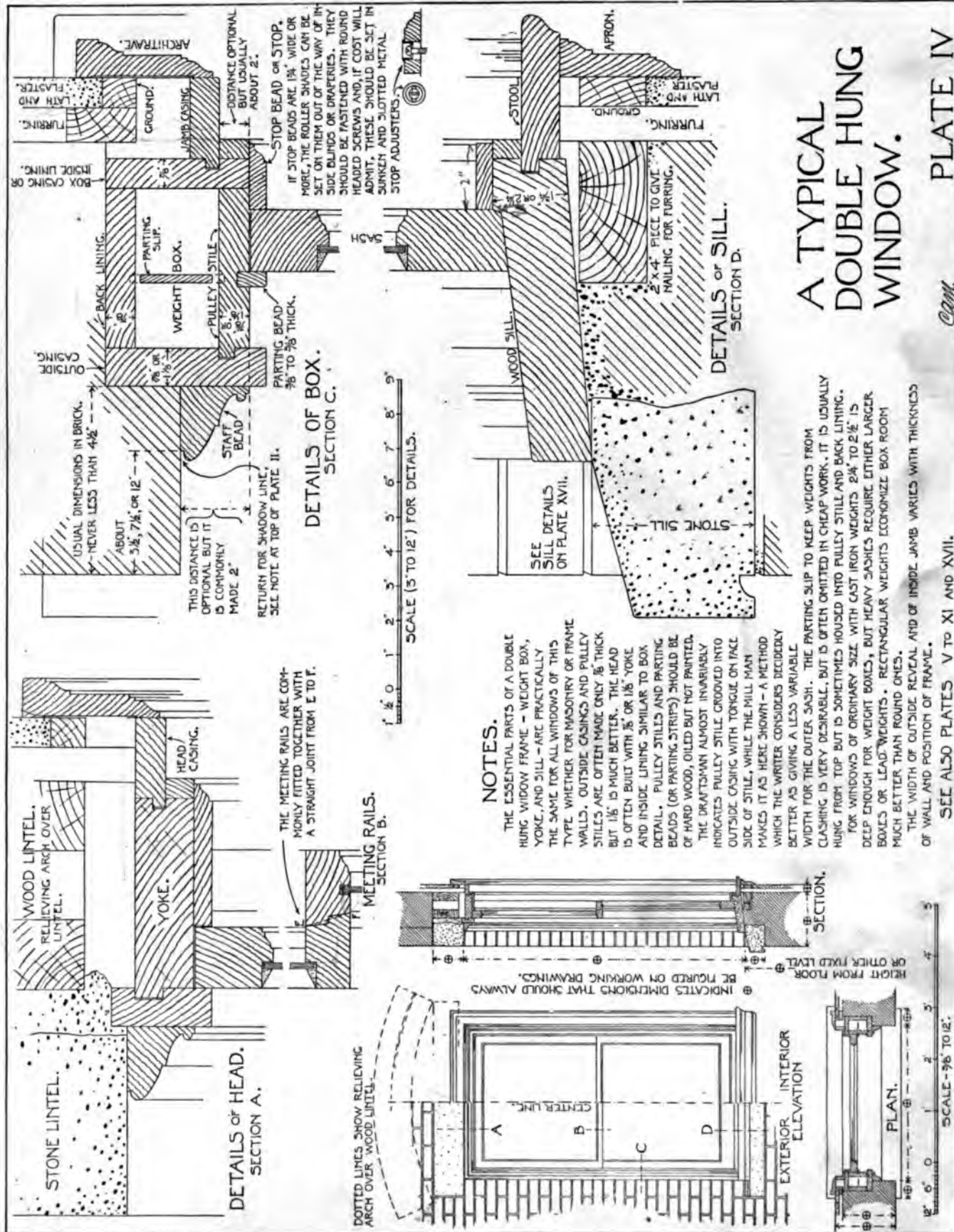
PLATE I.





DETAILS OF CELLAR WINDOWS AND BASE COURSES FOR FRAME COTTAGES.

PLATE III



A TYPICAL DOUBLE HUNG WINDOW.

PLATE IV

Cont.

1

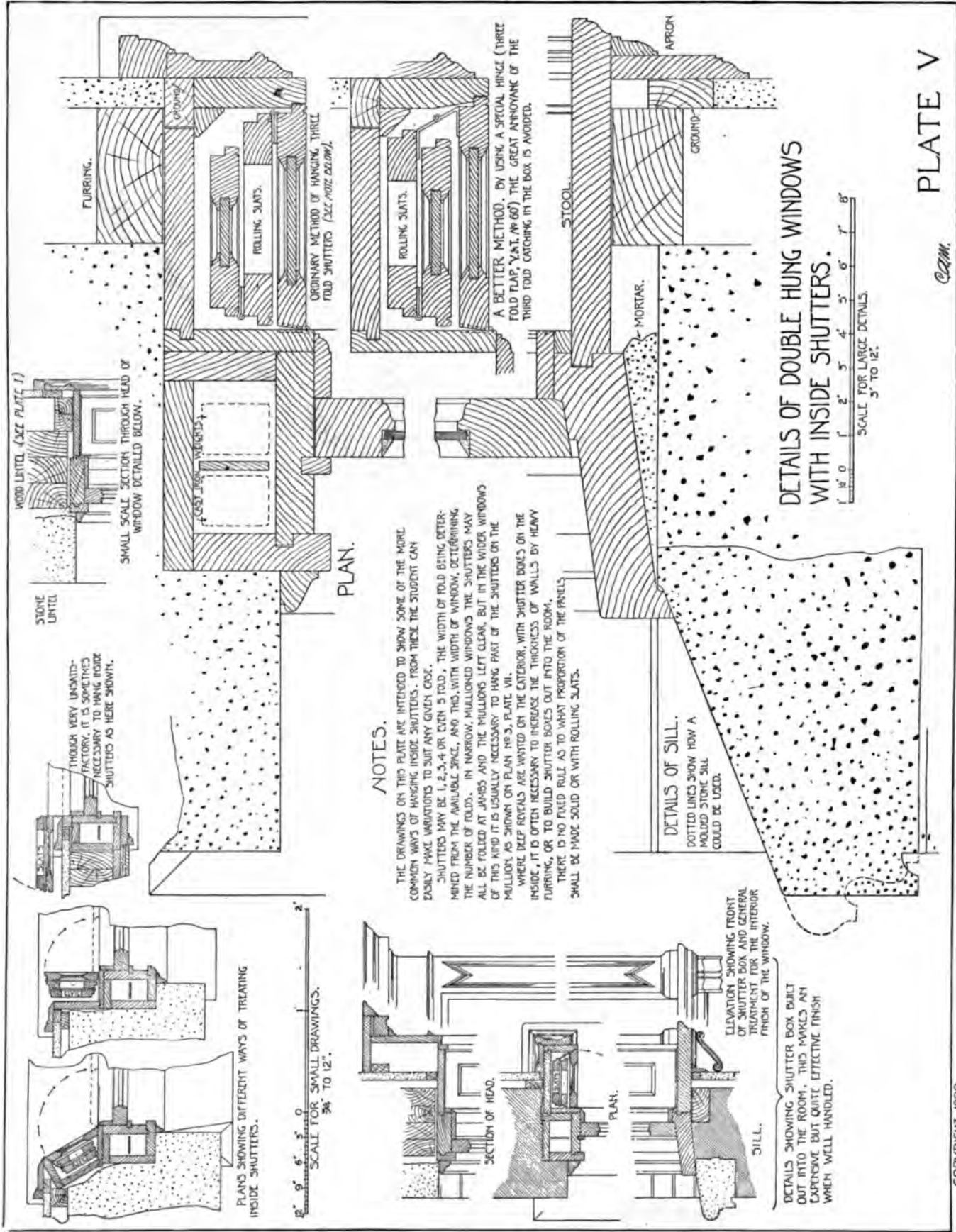
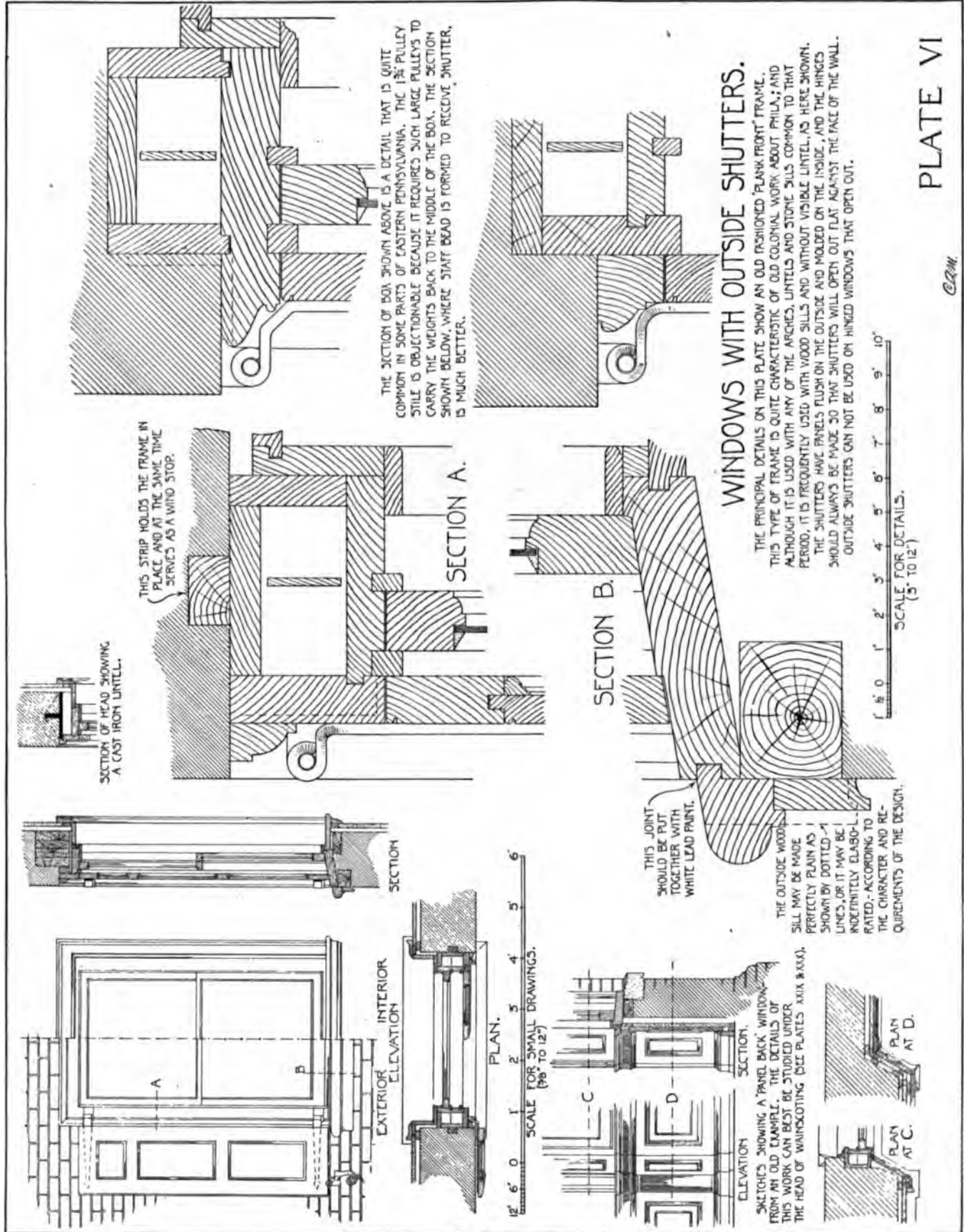


PLATE V

C. J. M.

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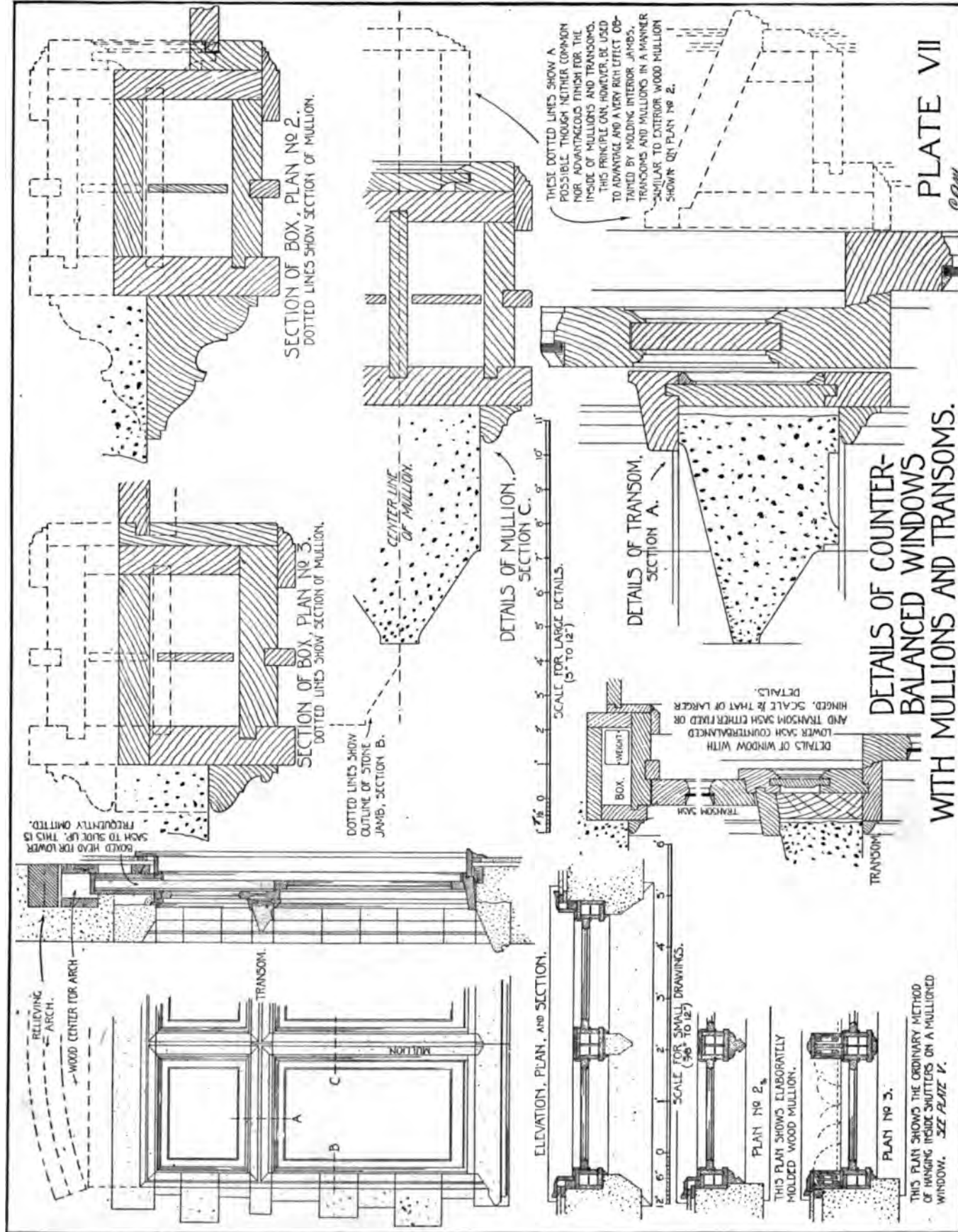


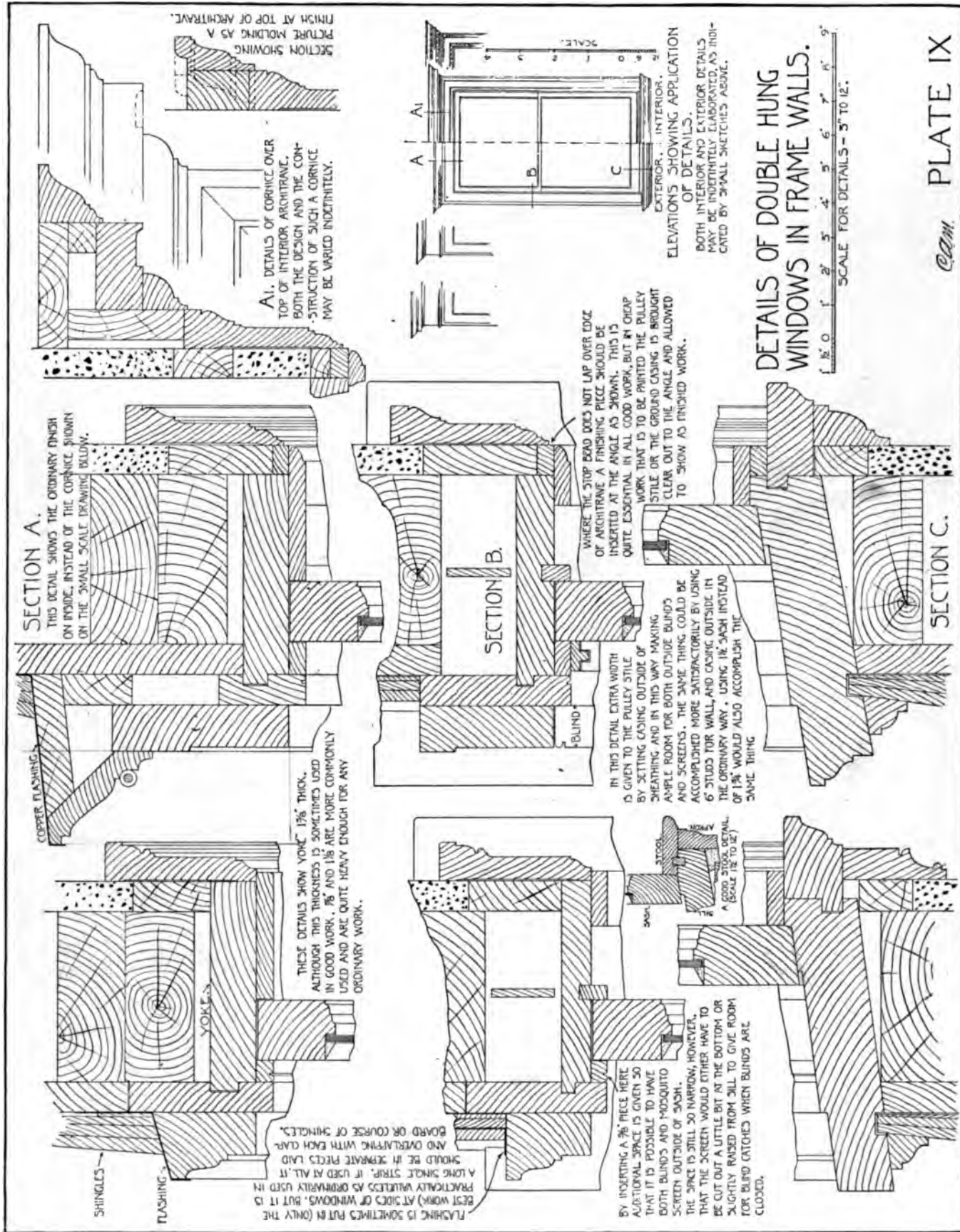


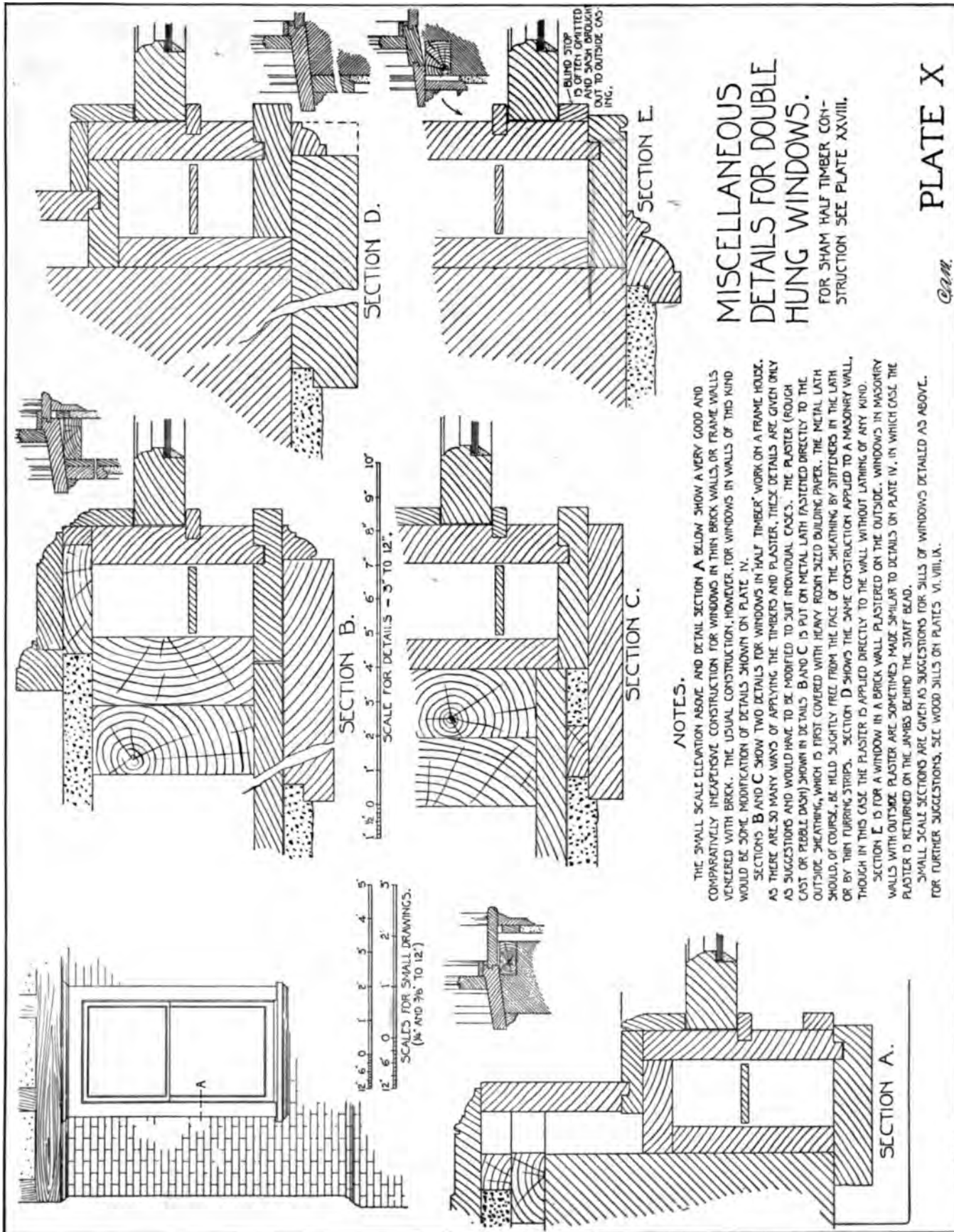
THE SECTION OF BOX SHOWN ABOVE IS A DETAIL THAT IS QUITE COMMON IN SOME PARTS OF EASTERN PENNSYLVANIA. THE 1 1/2" PULLEY STILE IS OBJECTIONABLE BECAUSE IT REQUIRES SUCH LARGE PULLEYS TO CARRY THE WEIGHTS BACK TO THE MIDDLE OF THE BOX. THE SECTION SHOWN BELOW, WHERE STAFF BEAD IS FORMED TO RECEIVE SHUTTER, IS MUCH BETTER.

WINDOWS WITH OUTSIDE SHUTTERS.

THE PRINCIPAL DETAILS ON THIS PLATE SHOW AN OLD FASHIONED PLANK FRONT FRAME. THIS TYPE OF FRAME IS QUITE CHARACTERISTIC OF OLD COLONIAL WORK ABOUT PHILA.; AND ALTHOUGH IT IS USED WITH ANY OF THE ARCHES, UNTELS AND STONE SILLS COMMON TO THAT PERIOD, IT IS FREQUENTLY USED WITH WOOD SILLS AND WITHOUT VISIBLE UNTEL AS HERE SHOWN. THE SHUTTERS HAVE PANELS FLUSH ON THE OUTSIDE AND MOLDED ON THE INSIDE, AND THE HINGES SHOULD ALWAYS BE MADE SO THAT SHUTTERS WILL OPEN OUT FLAT AGAINST THE FACE OF THE WALL. OUTSIDE SHUTTERS CAN NOT BE USED ON HINGED WINDOWS THAT OPEN OUT.







NOTES.

THE SMALL SCALE ELEVATION ABOVE AND DETAIL SECTION A BELOW SHOW A VERY GOOD AND COMPARATIVELY INEXPENSIVE CONSTRUCTION FOR WINDOWS IN THIN BRICK WALLS, OR FRAME WALLS VENEERED WITH BRICK. THE USUAL CONSTRUCTION, HOWEVER, FOR WINDOWS IN WALLS OF THIS KIND WOULD BE SOME MODIFICATION OF DETAILS SHOWN ON PLATE IV.

SECTIONS B AND C SHOW TWO DETAILS FOR WINDOWS IN "HALF TIMBER" WORK ON A FRAME HOUSE. AS THERE ARE SO MANY WAYS OF APPLYING THE TIMBERS AND PLASTER, THESE DETAILS ARE GIVEN ONLY AS SUGGESTIONS AND WOULD HAVE TO BE MODIFIED TO SUIT INDIVIDUAL CASES. THE PLASTER (ROUGH CAST OR PEBBLE DASH) SHOWN IN DETAILS B AND C IS PUT ON METAL LATH FASTENED DIRECTLY TO THE OUTSIDE SHEATHING, WHICH IS FIRST COVERED WITH HEAVY ROBIN SIZED BUILDING PAPER. THE METAL LATH SHOULD, OF COURSE, BE HELD SLIGHTLY FREE FROM THE FACE OF THE SHEATHING BY STIFFENERS IN THE LATH OR BY THIN FURRING STRIPS. SECTION D SHOWS THE SAME CONSTRUCTION APPLIED TO A MASONRY WALL, THOUGH IN THIS CASE THE PLASTER IS APPLIED DIRECTLY TO THE WALL WITHOUT LATHING OF ANY KIND.

SECTION E IS FOR A WINDOW IN A BRICK WALL PLASTERED ON THE OUTSIDE. WINDOWS IN MASONRY WALLS WITH OUTSIDE PLASTER ARE SOMETIMES MADE SIMILAR TO DETAILS ON PLATE IV, IN WHICH CASE THE PLASTER IS RETURNED ON THE JAMBS BEHIND THE STAFF BEAD.

SMALL SCALE SECTIONS ARE GIVEN AS SUGGESTIONS FOR SILLS OF WINDOWS DETAILED AS ABOVE. FOR FURTHER SUGGESTIONS, SEE WOOD SILLS ON PLATES VI, VIII, IX.

MISCELLANEOUS DETAILS FOR DOUBLE HUNG WINDOWS.

FOR SHAM HALF TIMBER CON-
STRUCTION SEE PLATE XXVIII.

PLATE X

C. & M.

FIG. 1. PLAN OF A BAY WINDOW WITH SMALL MULLIONS, AND WITH STOOL CARRIED IN TO INSIDE LINE OF WALL FORMING A DEEP WINDOW LEDGE OR SEAT.

FIG. 2. TWO SUGGESTIONS FOR BAY WINDOWS IN FRAME WALLS.

DOTTED LINES SHOW PANELLED CEILING.

SCALE FOR SMALL DRAWINGS. (3/8" TO 1 1/2").

FIG. 1 IS A SECTION SHOWING HOW A SASH CAN BE EVENLY COUNTERBALANCED WHEN IT MAY BE POSSIBLE TO HAVE A WEIGHT BOX ONLY AT ONE SIDE. THIS IS NOT A VERY SATISFACTORY SCHEME AND IS TO BE USED ONLY IN CASE OF NECESSITY.

FIG. 2 SHOWS THE METHOD OF HANGING TWO SASHES TO ONE WEIGHT AS REQUIRED BY DETAIL SECTION, B.

NOTE. SINCE THE ABOVE DRAWINGS WERE MADE SEVERAL GOOD OVERHEAD AND MULLION PULLEYS HAVE BEEN PUT ON THE MARKET.

DETAILS OF BAY WINDOWS WITH COUNTER-BALANCED SASHES.

THE DRAWINGS ON THIS PLATE SHOW ONLY A FEW OF THE MANY WAYS OF DETAILING BAY WINDOWS, BUT WITH THE PRINCIPLES HERE GIVEN THE STUDENT CAN MODIFY AND ELABORATE TO ANY EXTENT THAT HIS DESIGN MAY REQUIRE. THE MULLIONS MAY BE TREATED AS HEAVY, MOLDED MEMBERS, OR THEY MAY, IN MASONRY BUILDINGS, HAVE STONE MULLIONS ON THE OUTSIDE (SEE PLATE VI).

A BAY WINDOW MAY BE CARRIED TO THE FLOOR AND CEILING OF A ROOM; OR IT MAY FINISH ON THE INSIDE WALL OF THE ROOM AS ONE LARGE WINDOW WITH A BROAD STOOL, OR SEAT, AND WIDE HEAD CASING, THE HEAD CASING OFTEN BEING FINISHED AS A PANELLED CEILING.

THE JAMBS IN FINE WORK ARE OFTEN FINISHED WITH PLASTER CARVING AN ARCH OR AN ENTABLATURE AT THE CEILING OF THE BAY, BELOW THE CEILING OF THE ROOM.

PLAIN JAMBS MAY BE PANELLED IN WOOD, OR PLASTERED, ACCORDING TO COST OF WORK.

DETAILS C AND D SHOW PLAIN ORDINARY CONSTRUCTION; A AND B SHOW CONSTRUCTION WHERE THE DESIGN MAY REQUIRE VERY SMALL MULLIONS. IN B LEAD WEIGHTS, MADE TO FIT THE BOX, ARE EACH HUNG TO TWO SASHES AS IN FIG. 2, ABOVE.

DETAILS OF HEADS AND SILLS ARE NOT SHOWN HERE, BECAUSE, IF SIMPLE IN CONSTRUCTION THEY ARE IN NO WAY DIFFERENT FROM THE HEADS AND SILLS OF PLAIN WINDOWS; AND IF MORE ELABORATE, THE ELABORATION IS A MATTER OF DESIGN RATHER THAN OF CONSTRUCTION.

THE SIZE, PROJECTION, ANGLES, ETC., ARE ALL VARIABLE TO SUIT THE REQUIREMENTS OF ANY GIVEN PROBLEM. BAYS PROJECTING FROM MASONRY WALLS SHOULD ALWAYS BE WELL ANCHORED. IRON JAMB SCREW ANCHORS ARE COMMONLY USED.

DETAIL SECTION, A.

ANCHOR.

BLOCKING FOR NAILING OUT-SIDE CASING.

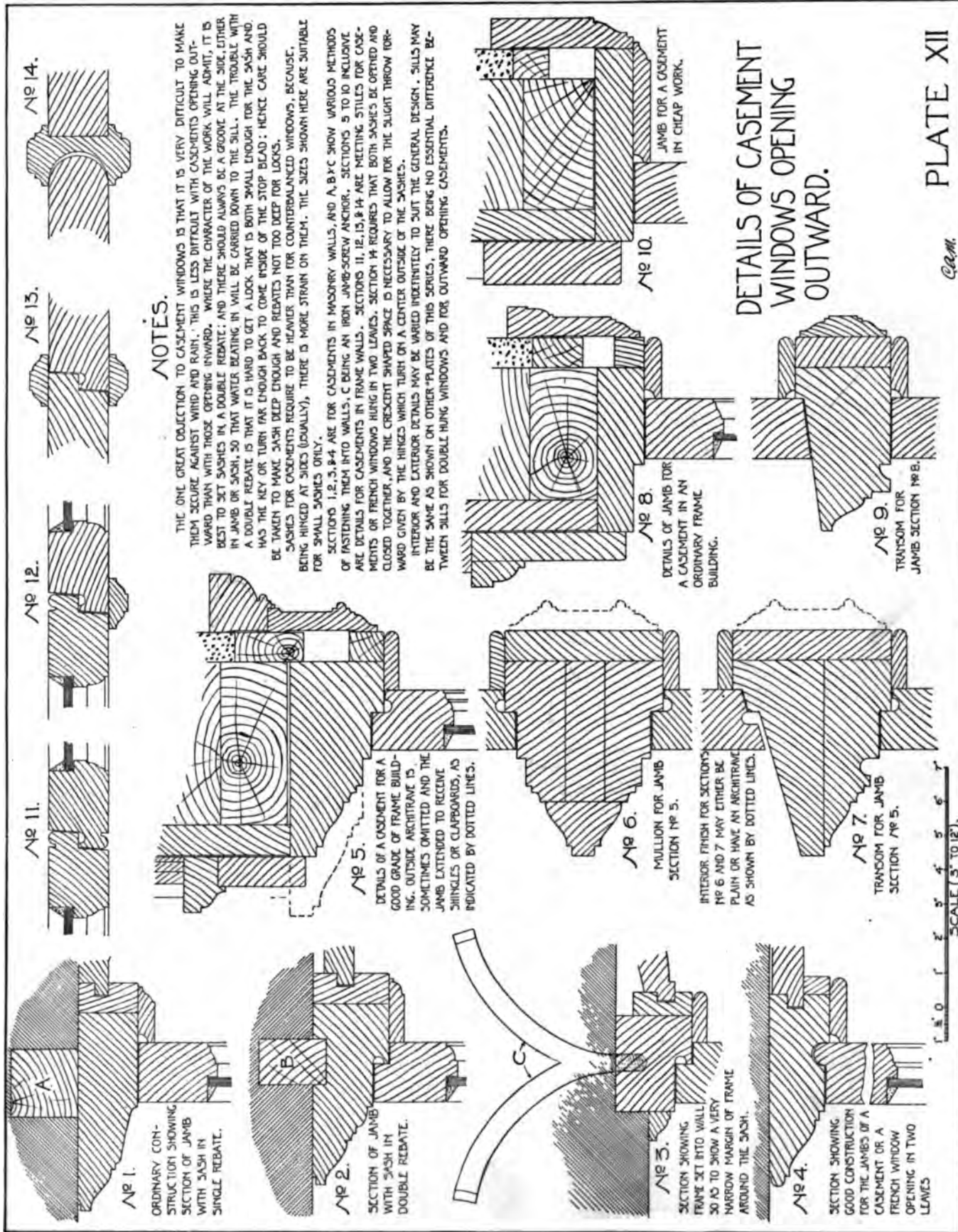
DETAIL SECTION, C.

ALTERNATE SUGGESTION GIVING A GOOD DETAIL FOR EXTERNAL ANGLES OF BAY.

DETAIL SECTION, D.

SCALE FOR DETAILS (3/8" TO 1 1/2").

PLAN OF AN ORDINARY BAY WINDOW IN A STONE WALL.



NOTES.

THE ONE GREAT OBJECTION TO CASEMENT WINDOWS IS THAT IT IS VERY DIFFICULT TO MAKE THEM SECURE AGAINST WIND AND RAIN. THIS IS LESS DIFFICULT WITH CASEMENTS OPENING OUTWARD THAN WITH THOSE OPENING INWARD. WHILE THE CHARACTER OF THE WORK WILL ADMIT, IT IS BEST TO SET SASHES IN A DOUBLE REBATE: AND THERE SHOULD ALWAYS BE A GROOVE AT THE SIDE, EITHER IN JAMB OR SASH, SO THAT WATER BEATING IN WILL BE CARRIED DOWN TO THE SILL. THE TROUBLE WITH A DOUBLE REBATE IS THAT IT IS HARD TO GET A LOCK THAT IS BOTH SMALL ENOUGH FOR THE SASH AND HAS THE KEY OR TURN FAR ENOUGH BACK TO COME INSIDE OF THE STOP BEAD: HENCE CARE SHOULD BE TAKEN TO MAKE SASH DEEP ENOUGH AND REBATES NOT TOO DEEP FOR LOCKS.

SASHES FOR CASEMENTS REQUIRE TO BE HEAVIER THAN FOR COUNTERBALANCED WINDOWS, BECAUSE, BEING HINGED AT SIDES (USUALLY), THERE IS MORE STRAIN ON THEM. THE SIZES SHOWN HERE ARE SUITABLE FOR SMALL SASHES ONLY.

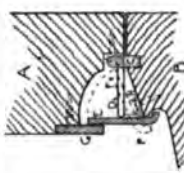
SECTIONS 1, 2, 3, 8, 9 ARE FOR CASEMENTS IN MASONRY WALLS, AND A, B, C SHOW VARIOUS METHODS OF FASTENING THEM INTO WALLS, C BEING AN IRON JAMB-SCREW ANCHOR. SECTIONS 5 TO 10 INCLUDE ARE DETAILS FOR CASEMENTS IN FRAME WALLS. SECTIONS 11, 12, 13, & 14 ARE METAL STILES FOR CASEMENTS OR FRENCH WINDOWS HUNG IN TWO LEAVES. SECTION 14 REQUIRES THAT BOTH SASHES BE OPENED AND CLOSED TOGETHER, AND THE CURVED SHAPED SPACE IS NECESSARY TO ALLOW FOR THE SLIGHT THROW FORWARD GIVEN BY THE HINGES WHICH TURN ON A CENTER OUTSIDE OF THE SASHES.

INTERIOR AND EXTERIOR DETAILS MAY BE VARIED INDEFINITELY TO SUIT THE GENERAL DESIGN. SILLS MAY BE THE SAME AS SHOWN ON OTHER PLATES OF THIS SERIES, THERE BEING NO ESSENTIAL DIFFERENCE BETWEEN SILLS FOR DOUBLE HUNG WINDOWS AND FOR OUTWARD OPENING CASEMENTS.

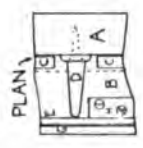
DETAILS OF CASEMENT WINDOWS OPENING OUTWARD.

DETAILS AND DESCRIPTION FROM THE
"DICTIONARY OF ARCHITECTURE,"
ISSUED BY THE ARCHITECTURAL PUBLICATION
SOCIETY, LONDON, ENG.

"A NEW KIND OF WATER BAR FOR FRENCH
CASEMENTS POSSESSING MANY ADVANTAGES, AND
WHICH HAS PROVED SUCCESSFUL IN USE FOR SOME
YEARS. IT IS ALSO APPLICABLE TO EXTERNAL DOORS,
AS WHEN THE WATER BAR IS FORCED DOWN BY THE
COVER FILLET, THE APPARATUS OFFERS NO IMPEDIMENT
TO THE FOOT, AND WHEN RAISED IS ABSOLUTELY
WEATHER-TIGHT. A. SECTION OF A 24" CASEMENT.
B. SILL. C. METAL BEAD, WITH OPENINGS FOR AN ARM, D,
TO MOVE THROUGH, AS SHOWN IN PLAN. D. METAL ARM,
FIXED TO CASEMENT (ONE IN THE CENTER OF EACH CASEMENT),
TO LIFT THE WATER BAR. E. IN CLOSING THE CASEMENT.
E. METAL WATER BAR, HINGED AT H, LIFTED BY THE ARM,
D, AND FORCED BY IT AGAINST G. A METAL COVER
FILLET FASTENED TO THE OUTSIDE OF THE CASEMENT.
F. SHOWS THE POSITION OF THE WATER BAR WHEN THE CASEMENT IS OPEN, TO
ALLOW THE COVER FILLET, G, TO PASS OVER IT. THIS ARRANGEMENT IS FOUND
IN PRACTICE TO BE MOST EFFICIENT, AND TO KEEP FOR A LONG TIME IN PERFECT
WORKING ORDER."



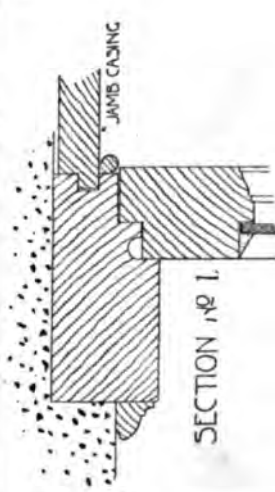
SECTION A



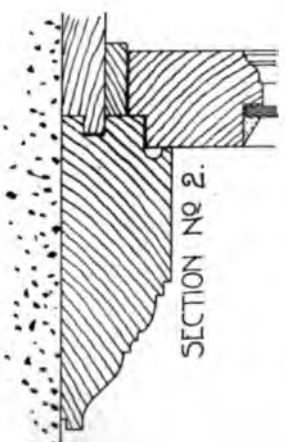
PLAN A



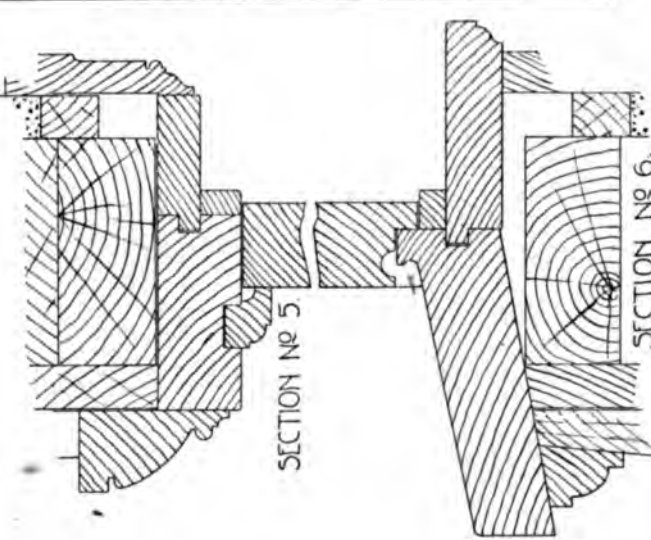
SECTION NO 4



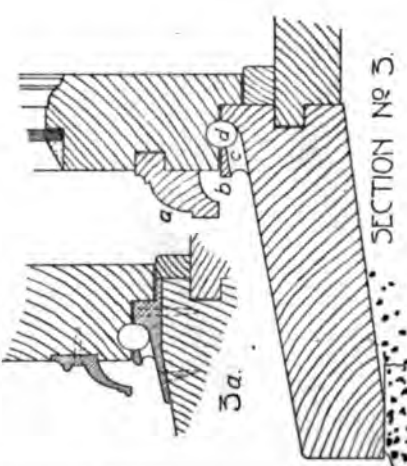
SECTION NO 1



SECTION NO 2

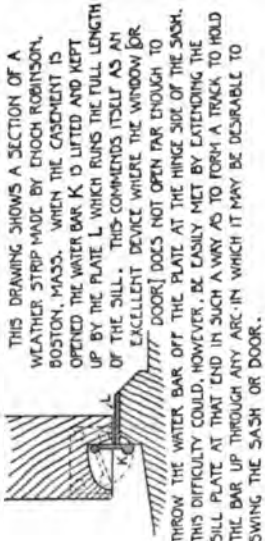


SECTION NO 5



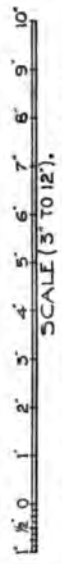
SECTION NO 3

SECTION NO 6



THIS DRAWING SHOWS A SECTION OF A
WEATHER STRIP MADE BY ENOCH ROBINSON,
BOSTON, MASS. WHEN THE CASEMENT IS
OPENED THE WATER BAR K IS LIFTED AND KEPT
UP BY THE PLATE L WHICH RUNS THE FULL LENGTH
OF THE SILL. THIS COMMENDS ITSELF AS AN
EXCELLENT DEVICE WHERE THE WINDOW OR
DOOR DOES NOT OPEN FAR ENOUGH TO
THROW THE WATER BAR OFF THE PLATE AT THE HINGE SIDE OF THE SASH.
THIS DIFFICULTY COULD, HOWEVER, BE EASILY MET BY EXTENDING THE
SILL PLATE AT THAT END IN SUCH A WAY AS TO FORM A TRACK TO HOLD
THE BAR UP THROUGH ANY ARC IN WHICH IT MAY BE DESIRABLE TO
SWING THE SASH OR DOOR.

DETAILS OF CASEMENT WINDOWS OPENING IN.

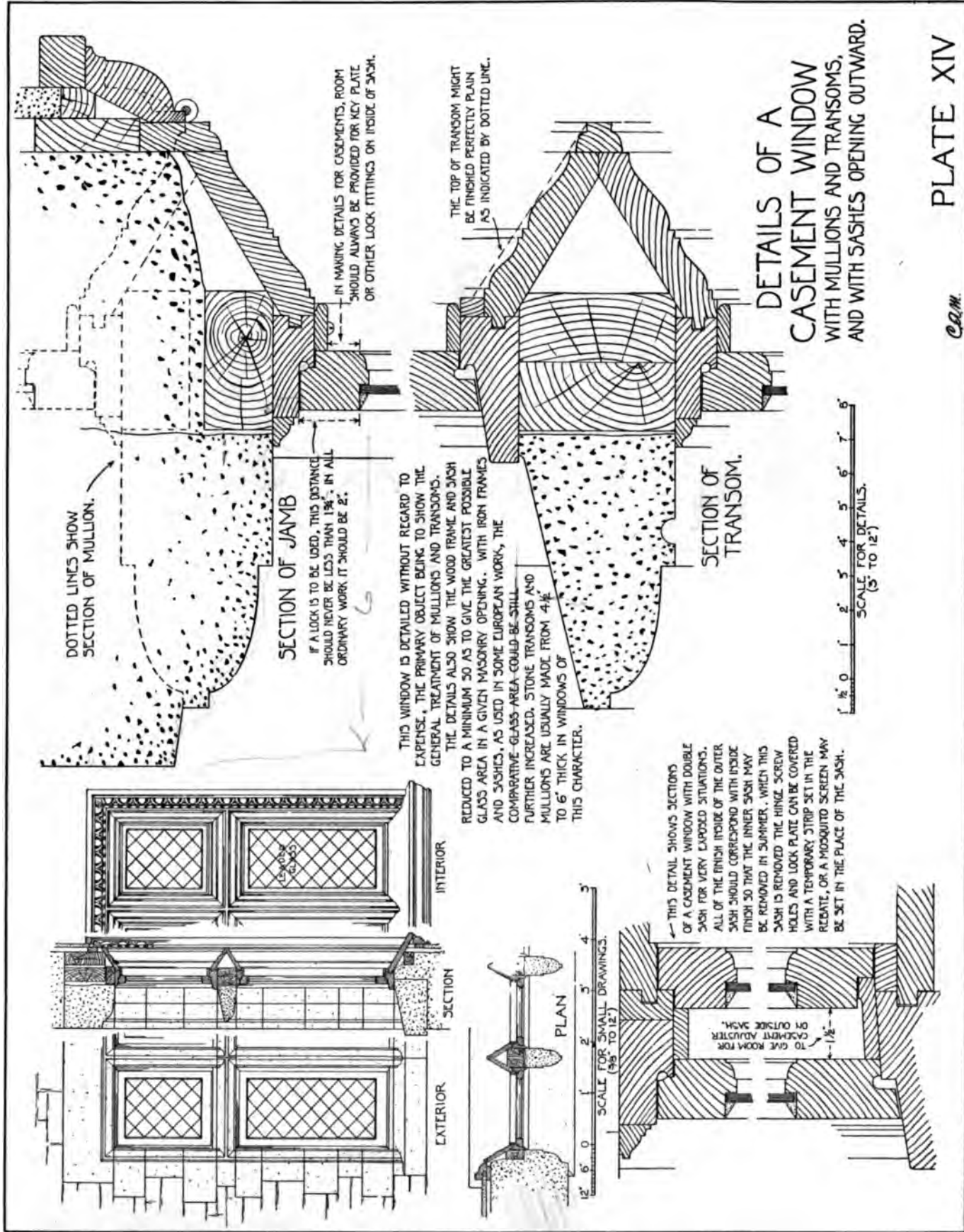


READ NOTES ON PLATE XII. SEE ALSO PLATES XIV, XV, & XVI.

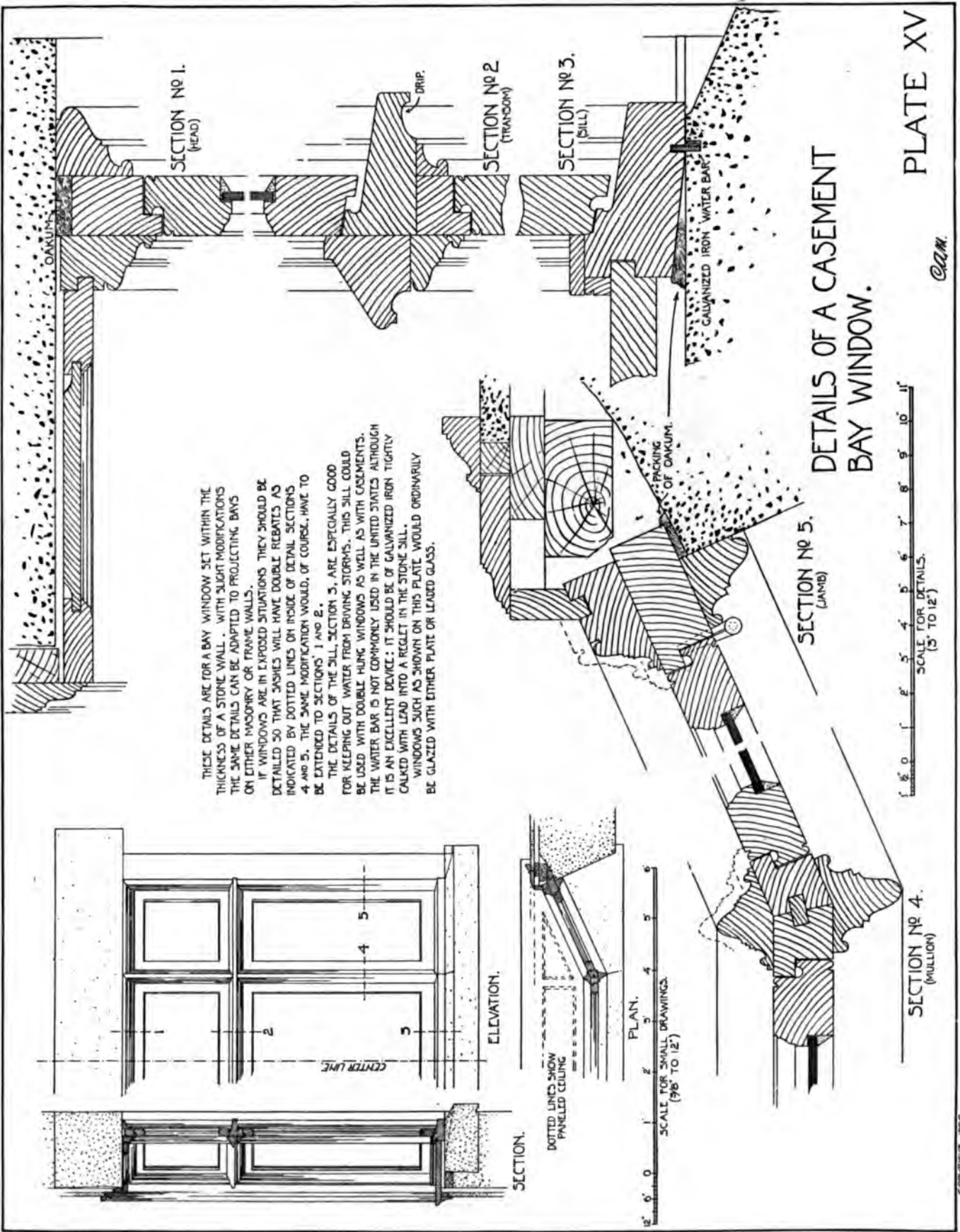
NOTES. THE SPECIAL DIFFICULTY ALWAYS MET WITH IN CASEMENTS OPENING IN IS THAT IT IS NEXT TO IMPOSSIBLE TO MAKE
SILLS THAT ARE PERFECTLY WEATHER-PROOF. SECTIONS 1, 2, 4, AND 5 SHOW VARIOUS JAMB SECTIONS ADAPTABLE TO DIFFERENT KINDS
OF WORK. SILL SECTION NO 6 IS A GOOD ENOUGH FORM FOR CHEAP WORK OR WHERE WINDOWS ARE WELL SHELTERED. NO 3 IS
A MORE ELABORATE AND CAREFULLY STUDIED SECTION: THE DRIP MOLDING *a* CARRIES THE WATER OUT AND AWAY FROM THE JOINT AT
THE BOTTOM OF SASH. THE RAISED LIP *b*, ON SILL, TENDS TO TURN BACK WATER THAT THE WIND WOULD OTHERWISE DRIVE IN UNDER THE
SASH, WHILE ANY WATER THAT MAY FINALLY GET INSIDE OF THIS POINT IS COLLECTED IN THE GROOVE *d* AND CARRIED OUT THROUGH THE
HOLES *e* WHICH ARE 3/8 IN DIAMETER AND ABOUT 5" OR 6" APART. IT WOULD BE AN IMPROVEMENT IF THE ESSENTIAL FEATURES OF NO 3
COULD BE MADE IN STEEL OR BRONZE AS SUGGESTED BY SECTION 3a.

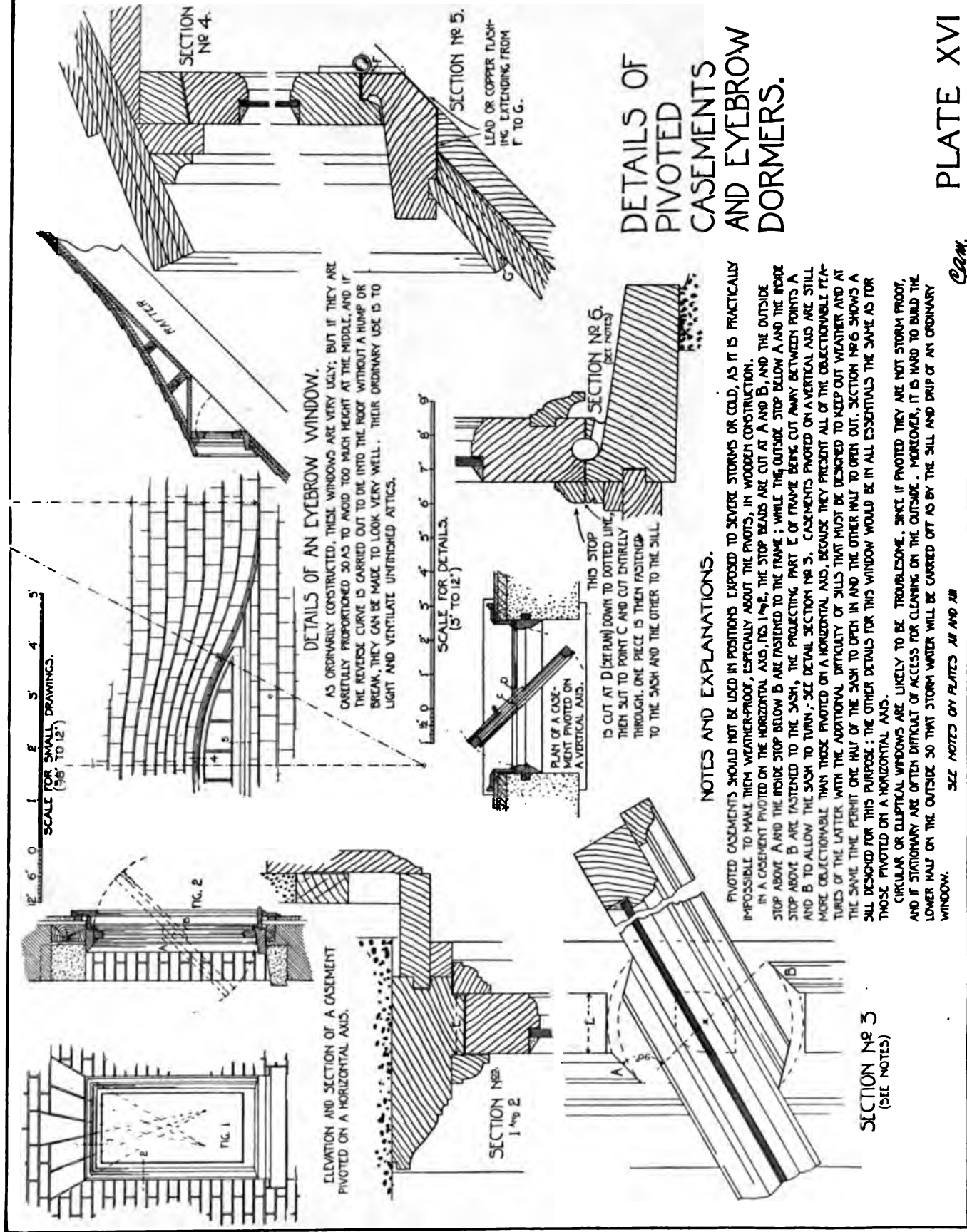
IN ENGLAND CASEMENTS ARE FREQUENTLY MADE WITH FRAMES AND SASHES OF IRON, AND THE FORMS OF CONSTRUCTION USED TO
EXCLUDE WIND AND RAIN ARE SOMETIMES VERY ELABORATE.

COPYRIGHT 1899.

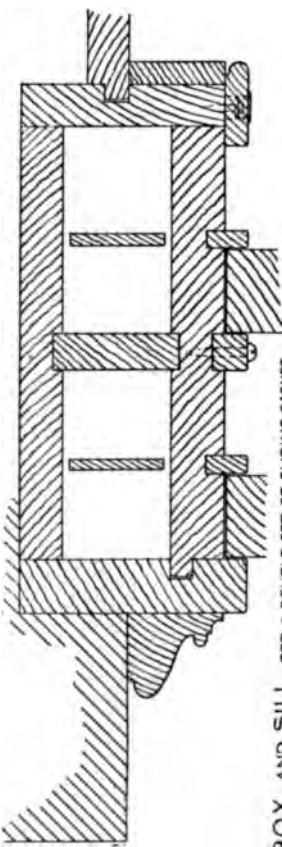


C. Q. M.



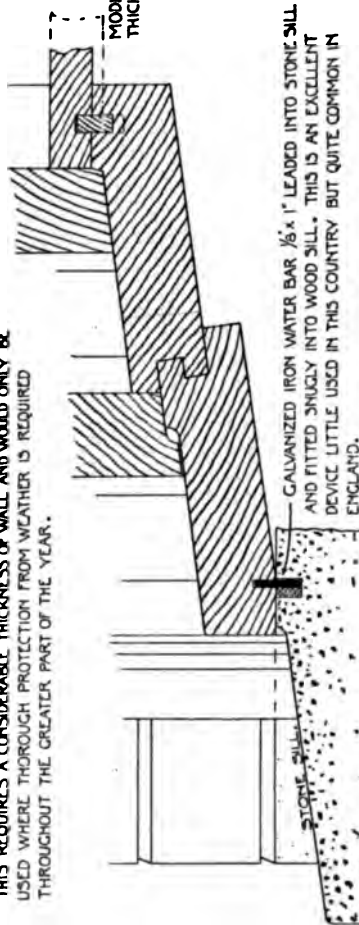


ORDINARY WINDOW WITH STORM SASH.



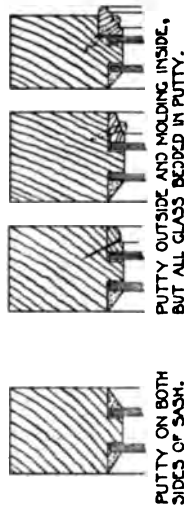
BOX AND SILL FOR A DOUBLE SET OF SLIDING SASHES. THIS REQUIRES A CONSIDERABLE THICKNESS OF WALL AND WOULD ONLY BE USED WHERE THOROUGH PROTECTION FROM WEATHER IS REQUIRED THROUGHOUT THE GREATER PART OF THE YEAR.

DOTTED LINES SHOW MODIFICATIONS FOR A THICKER STOOD.



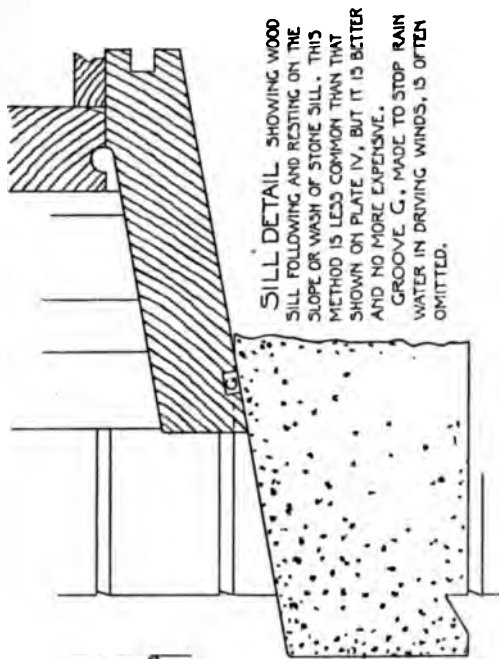
SCALE - 3' TO 12.

DOUBLE GLAZED SASHES.



PUTTY ON BOTH SIDES OF SASH. PUTTY OUTSIDE AND MOLDING INSIDE, BUT ALL GLASS BEDDED IN PUTTY.

SASHES ARE SOMETIMES DOUBLE GLAZED AS A PROTECTION AGAINST COLD; BUT THIS IS NOT ADVISABLE WITH CLEAR GLASS, AS FINE DUST IS ALMOST SURE TO WORK IN BETWEEN INNER AND OUTER PANE, THE GLASS "SWEATS" MORE OR LESS IN COLD WEATHER, AND BE-TWEEN DUST AND MOISTURE A THIN FILM GATHERS ON THE INNER SURFACES AND DESTROYS THE CLEAR-NESS OF THE GLASS. IF TINTED OR COLORED GLASS IS USED THE EFFECTS OF THE DUST AND MOISTURE ARE LESS APPARENT AND NOT LIKELY TO BE ANNOYING, IF GLAZING IS WELL DONE.

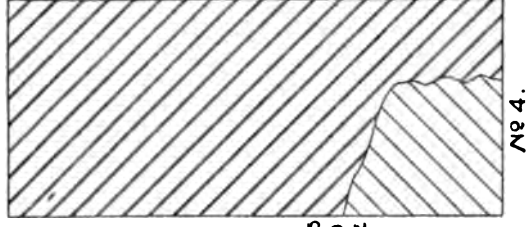
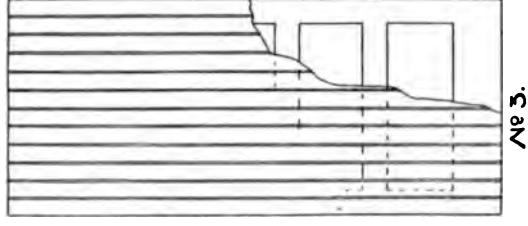
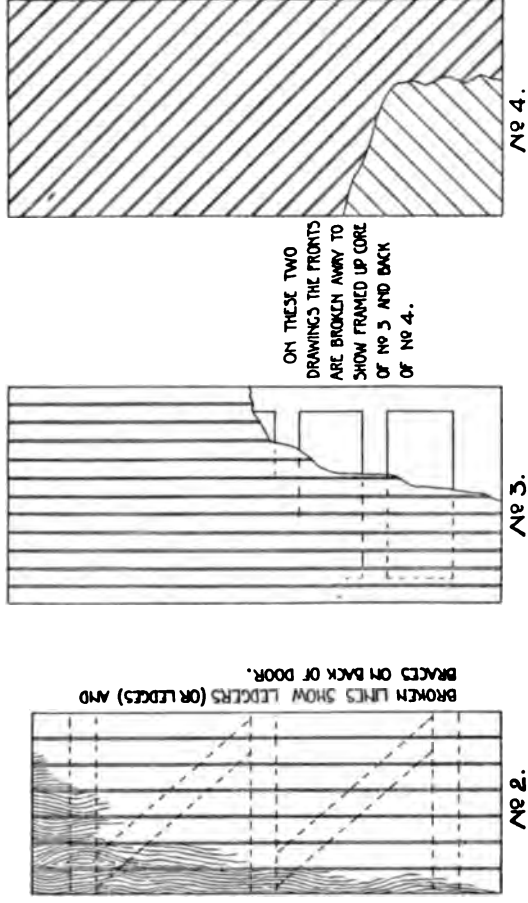
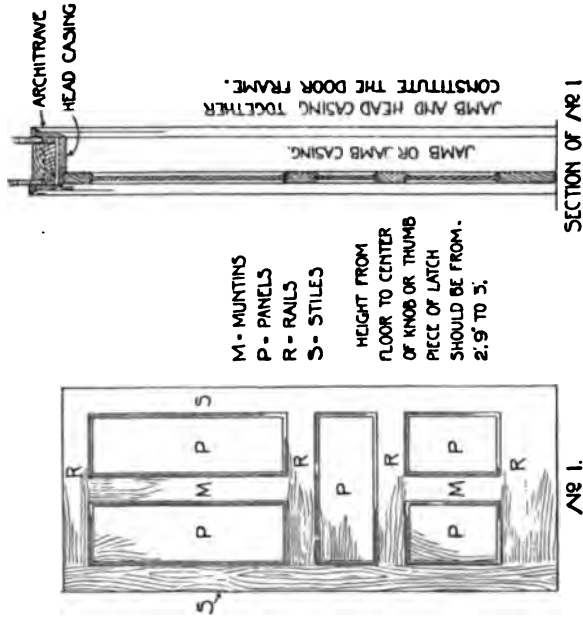


STORM RESISTING WINDOWS.

STORM SASHES COULD BE USED IN PLACE OF OUTSIDE SHUTTERS OR BUNDS WITH DETAILS ON PLATES VI, VII, AND IX.

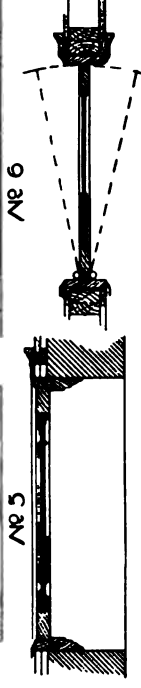
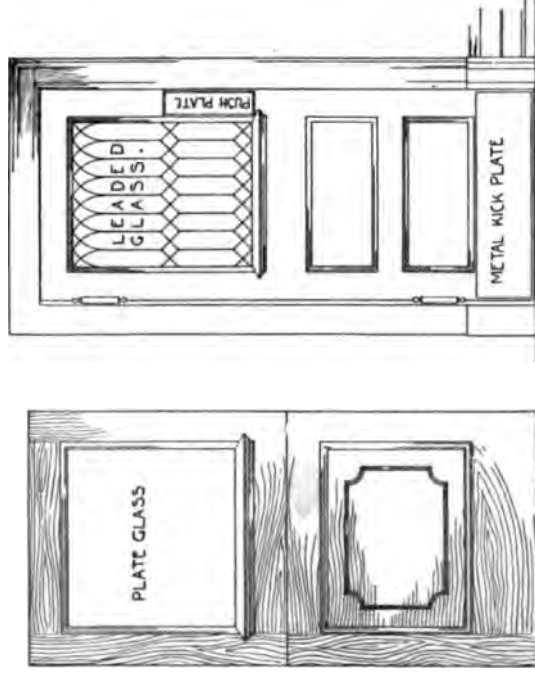
C.R.M.

PLATE XVII



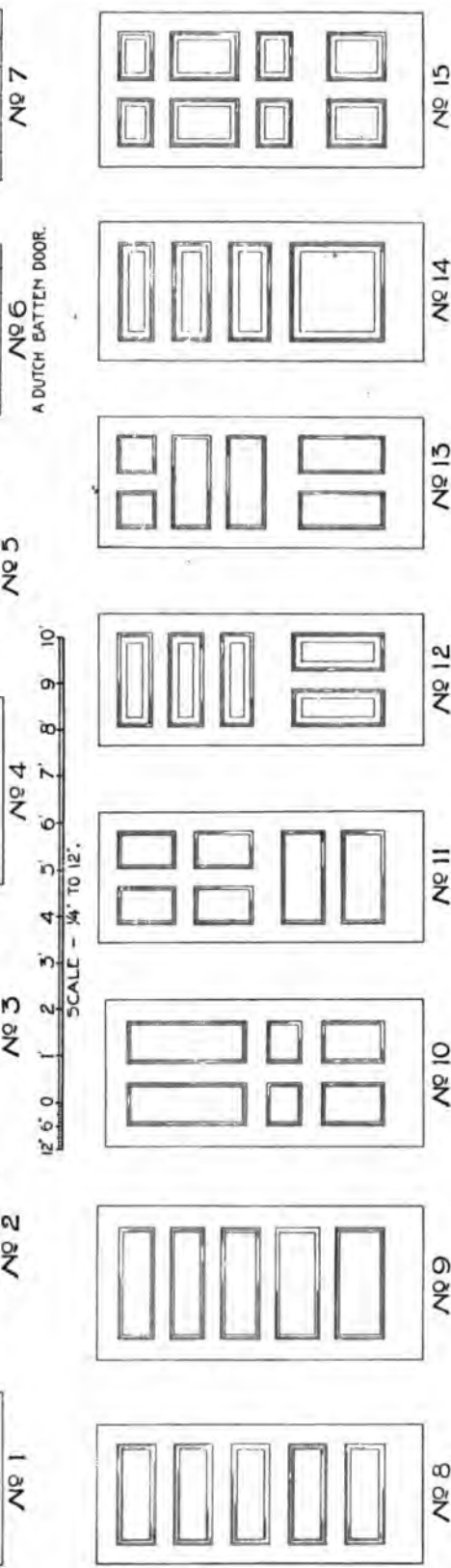
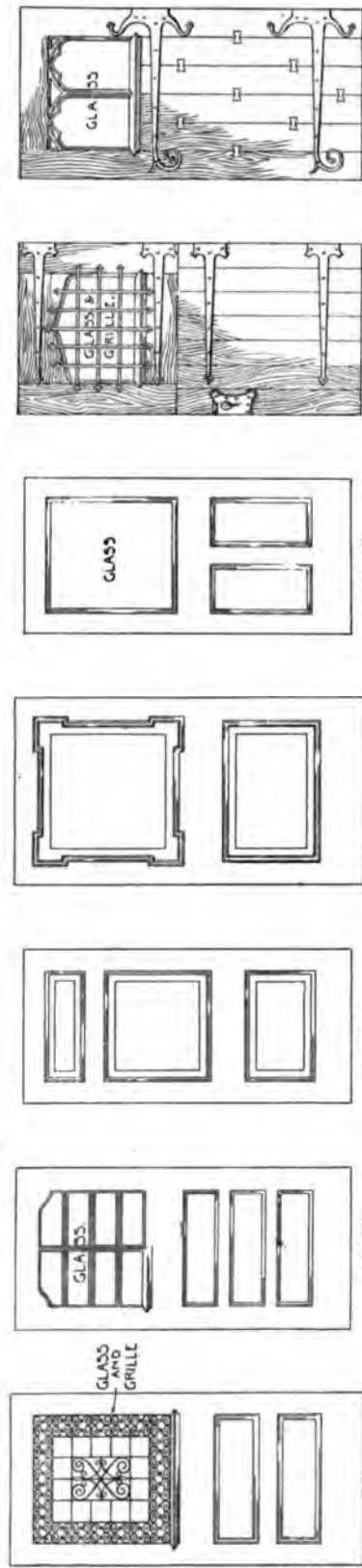
TYPES OF DOORS. WITH GENERAL DISCUSSION.

- NO. 1. THIS IS AN ORDINARY PANELED DOOR, THE MOST COMMON TYPE OF DOOR IN USE. THE NUMBER AND ARRANGEMENT OF PANELS MAY BE VARIED INDEFINITELY AT THE OPTION OF THE DESIGNER. IT IS DESIRABLE, HOWEVER, SO TO DESIGN IT THAT THE LOCK WILL COME OPPOSITE A PANEL AND THUS AVOID WEAKENING THE DOOR BY CUTTING OFF TENONS FOR LOCK. A GOOD DOOR SHOULD BE BLIND TENONED SO THAT ENDS OF TENONS WILL NOT SHOW ON EDGES OF DOOR.
- NO. 2. A LEDGED DOOR CONSISTING OF ORDINARY MATCHED BOARDS (USUALLY BEADED OR VED) WITH LEDGERS (LEDGES) AND BRACES ON THE BACK. - NOT MUCH USED EXCEPT IN BOARD PARTITIONS OR SMALL CLOSETS IN CHEAP WORK.
- NO. 3. A BATTEN DOOR WITH FRAMED UP CORE. THIS IS THE BEST METHOD OF CONSTRUCTING A BATTEN DOOR, BUT IS EXPENSIVE. TREATED ORNAMENTALLY WITH WROUGHT IRON HINGES, ETC. THIS TYPE OF DOOR MAY BE USED VERY EFFECTIVELY IN SOME PLACES. SOMETIMES BATTENS ARE PUT ON ONE SIDE OF A PANELED DOOR, THUS SHOWING AS A BATTEN DOOR ON ONE SIDE AND A PANELED DOOR ON THE OTHER.
- NO. 4. A SOLID BATTEN DOOR MADE OF TWO THICKNESSES OF $\frac{7}{8}$ " MATCHED BOARDS - USUALLY BEADED OR VED- LAID DIAGONALLY, WITH THE BOARDS ON ONE SIDE AT RIGHT ANGLES TO THOSE ON THE OTHER. A SOLID DOOR OF THIS KIND COVERED WITH SHEET METAL - TIN, IRON, COPPER - WITH LOCK JOINTS AND WITH STRAP HINGES BOLTED ON MAKES THE BEST KIND OF FIRE DOOR. ASBESTOS PAPER IS SOMETIMES PUT UNDER THE METAL COVERING.
- NO. 5. A "DUTCH DOOR", - USED FOR OUTSIDE DOORS ONLY. THE UPPER PART IS ARRANGED TO OPEN INDEPENDENTLY OF THE LOWER PART, A SLIDING BOLT FASTENING THE TWO PARTS TOGETHER WHEN REQUIRED TO WORK AS A SINGLE DOOR. THE UPPER PART MAY HAVE EITHER GLASS OR WOOD PANELS.
- NO. 6. A DOUBLE ACTING SERVICE DOOR FOR PANTRIES, ETC. GLASS IN UPPER PART PREVENTS COLLISIONS IN SERVICE. IN LARGE HOTELS WHERE ONE DOOR IS USED FOR ENTRANCE AND ANOTHER FOR EXIT THE GLASS IS USUALLY DISPENSED WITH AND DOORS ARE OFTEN COVERED WITH CLOTH OR LEATHER.



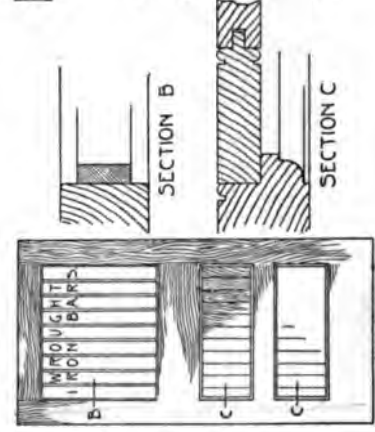
12' 6' 0' 1' 2' 3' 4' 5' 6' 7'
SCALE - $\frac{1}{8}$ " TO 12"

11

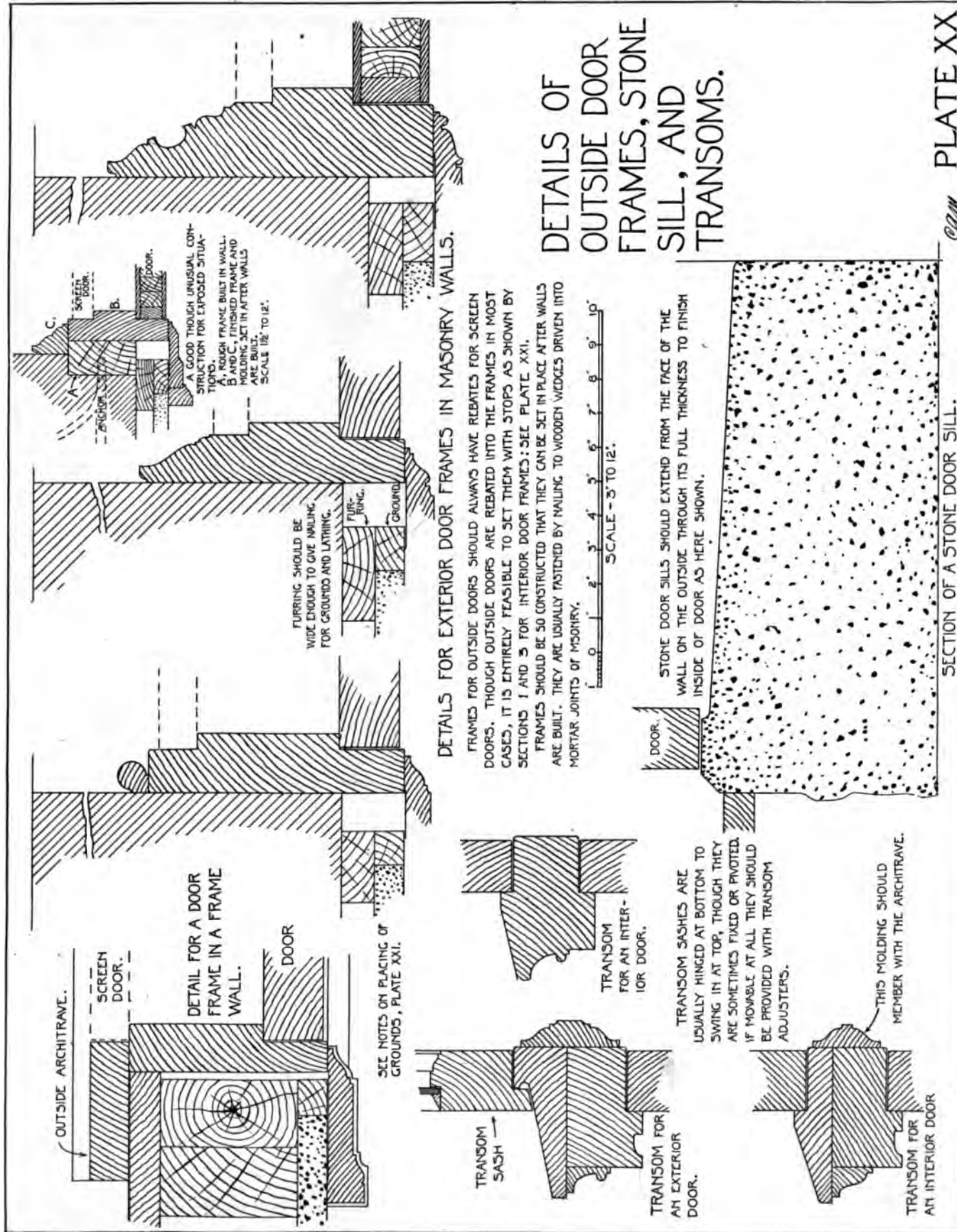


EXAMPLES OF DOORS IN VARIOUS STYLES.

NO 1 TO 7 ARE SUGGESTIONS FOR ENTRANCE DOORS AND NO 8 TO 16 ARE SUGGESTIONS FOR INTERIOR DOORS. W.C. DOORS (NO 17) ARE SIMPLY TO SCREEN THE SEPARATE COMPARTMENTS AND SHOULD BE MADE SMALL AND LIGHT SLATS SHOULD OVERLAP SO AS TO CUT OFF ANY HORIZONTAL LINE OF VISION FROM THE OUTSIDE. BOX STALL DOORS (NO 18) SHOULD BE HEAVY AND STRONG. THE OBJECT IN CONSTRUCTING PANELS AS HERE SHOWN IS TO MAKE SOMETHING THAT IS NOT EASILY DAMAGED BY A KICKING HORSE AND IS EASILY REPAIRED IF DAMAGED.

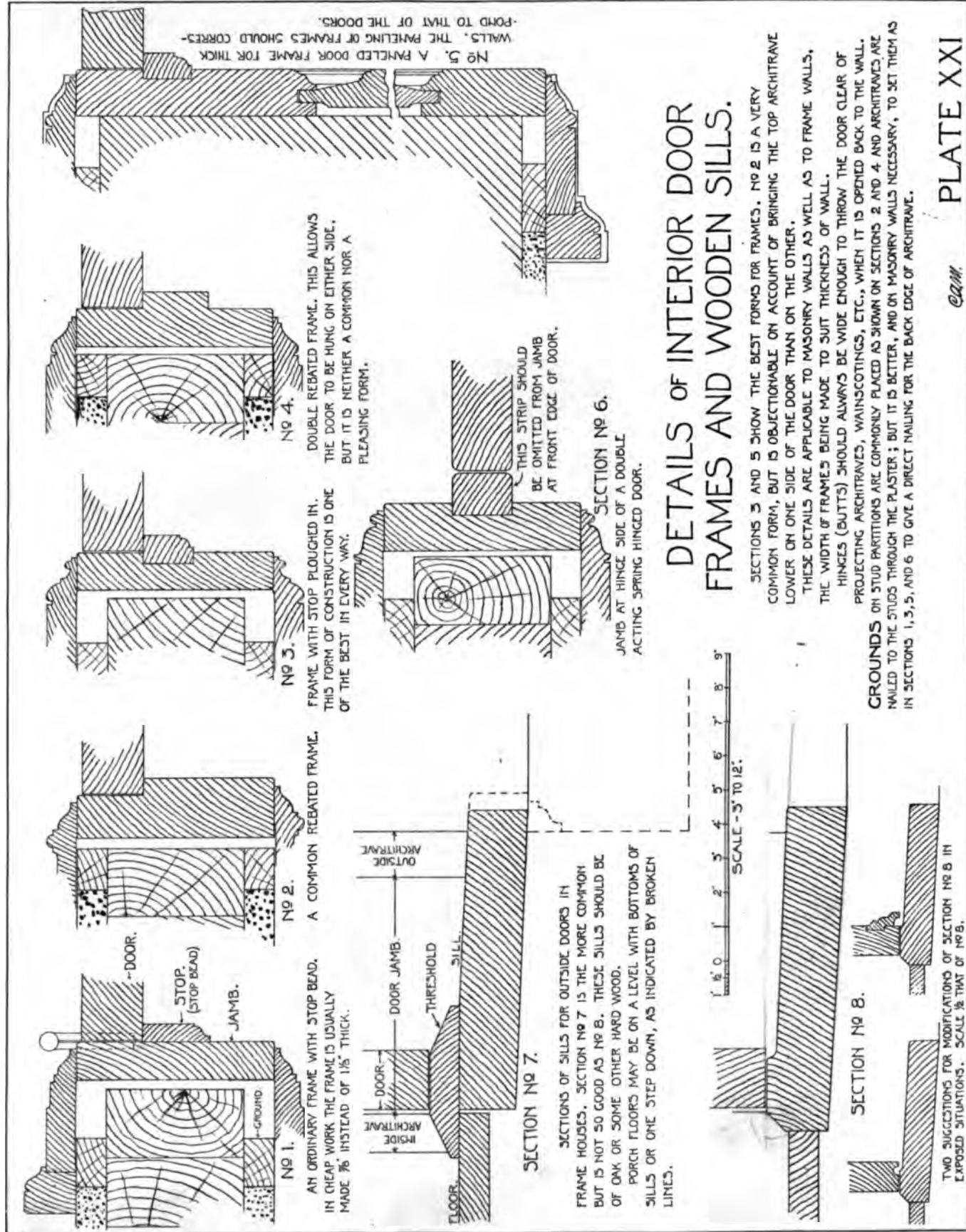


NO 18
DOOR FOR BOX STALL
IN A STABLE.



DETAILS OF OUTSIDE DOOR FRAMES, STONE SILL, AND TRANSOMS.

CAN. PLATE XX





No 1

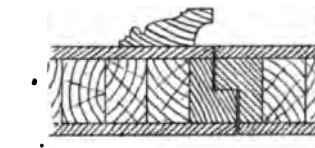


No 2

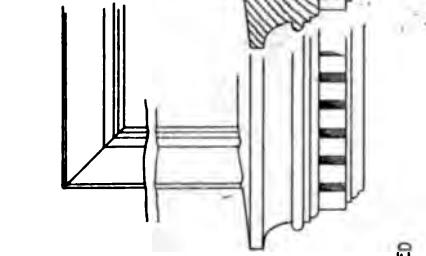


No 3

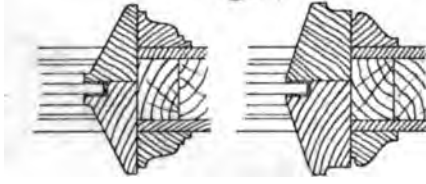
SECTIONS 1 TO 3A ARE DETAILS FOR SMALL DOORS SUCH AS ARE USED FOR KITCHEN AND PANTRY DRESSERS. WIDTHS OF STILES, RAILS, ETC., WILL VARY WITH THE DESIGN AND SIZE OF DOOR.



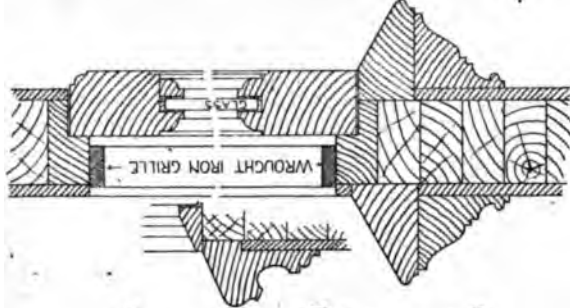
DETAILS OF JOINT BETWEEN UPPER AND LOWER PARTS OF A DUTCH DOOR. DRIP MOLDING MAY BE OMITTED IF DOOR IS SHELTERED BY A PORCH ROOF.



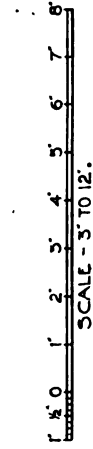
DETAILS OF MOLDINGS AT BOTTOMS OF GLASS PANELS IN DOORS. THESE ARE OFTEN OMITTED AND THE PANEL MOLDING CONTINUED ACROSS AT BOTTOM OF GLASS THE SAME AS AT TOP AND SIDES.



DETAILS OF MOLDINGS AT BOTTOMS OF GLASS PANELS IN DOORS. THESE ARE OFTEN OMITTED AND THE PANEL MOLDING CONTINUED ACROSS AT BOTTOM OF GLASS THE SAME AS AT TOP AND SIDES.



DOOR WITH GRILLE AND GLASS. THE GLASS IS SET IN A HINGED FRAME SO THAT IT CAN BE OPENED FOR CLEANING THE OUTSIDE.



No 4



No 5



5A



No 9



9A



No 6



6A



No 7



7A



No 8



8A

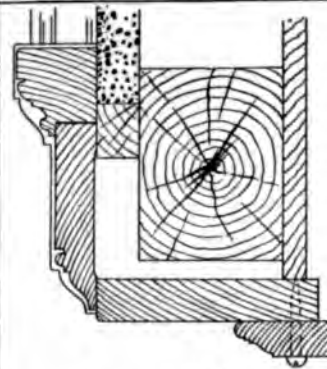
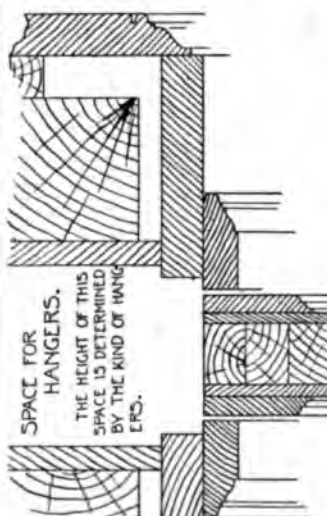
DETAILS OF DOORS

CHEAP AND MEDIUM GRADE DOORS ARE USUALLY MADE FROM SOLID STOCK, BUT THE BETTER GRADES SHOULD BE VENEERED ON A BUILT UP CORE OF WHITE PINE. PANELS ARE USUALLY SOLID, BUT IF VERY LARGE, OR IF THE TWO SIDES ARE REQUIRED TO SHOW DIFFERENT KINDS OF WOOD, THEY SHOULD BE BUILT UP IN "THREE PLY" AS INDICATED IN SECTION NO 8. WIDTHS OF STILES, ETC., VARY IN COMMON PRACTICE. SEPARATE MOLDINGS SET WITH FIXED TONGUE ON STILES AND RAILS, LEAVING PANELS FREE TO MOVE, AS SHOWN IN SECTIONS 7, 9, 10, & 11, ARE MUCH BETTER THAN MOLDINGS RUN SOLID. MOLDINGS SHOULD NEVER BE FASTENED DIRECTLY TO PANELS.

SECTIONS 4 TO 7A ARE FOR COMMON SOLID DOORS, WHILE SECTIONS 8 TO 11 ARE FOR MORE EXPENSIVE VENEERED DOORS.

SECTIONS 10 AND 11 EACH SHOW TWO STYLES OF FINISH, ONE SIDE DIFFERING FROM THE OTHER. THIS IS UNUSUAL, BUT THE DIFFERENCE IN TREATMENT OF TWO ROOMS MAY SOMETIMES REQUIRE IT.

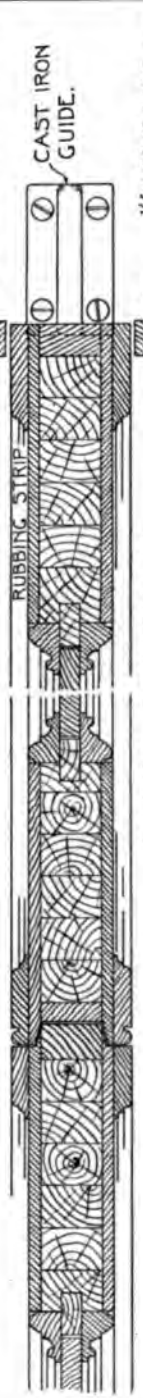
C.R.M.



NOTES ON HANGERS.

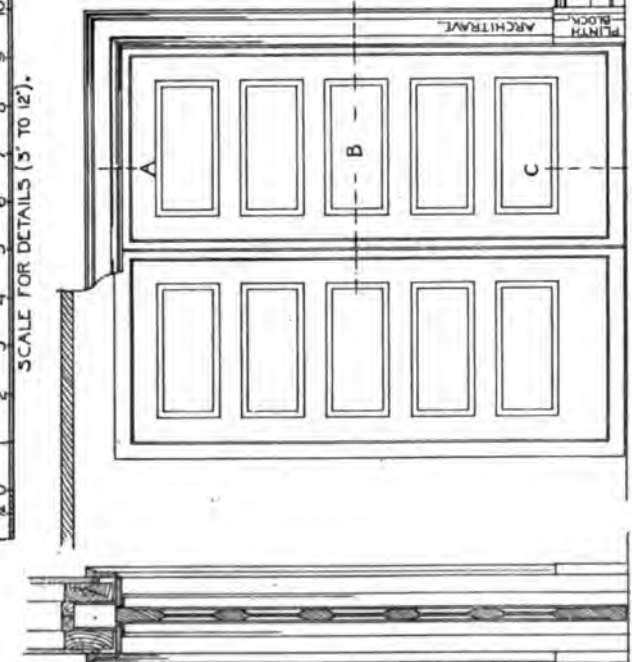
AS THERE ARE NOW A NUMBER OF EXCELLENT SLIDING DOOR HANGERS ON THE MARKET, IT SEEMED BEST NOT TO SHOW ANY PARTICULAR ONE HERE. FOR SIMPLE AND CHEAP HANGERS ORDINARY GROOVED SHEAVES RUNNING ON A SINGLE STEEL TRACK ARE GOOD, BUT FOR A GOOD GRADE OF WORK THOSE OVERHEAD HANGERS WITH ROLLER BEARINGS AND ADJUSTABLE TUBULAR TRACKS ARE RECOMMENDED. TRACKLESS HANGERS WITH LONG ARMS AND LAZY TONGS MOVEMENT ARE OFTEN USED, BUT THERE ARE USUALLY SO MANY PARTS TO GET OUT OF ORDER THAT THEY ARE SELDOM AS SATISFACTORY AS THE MORE SIMPLE OVERHEAD HANGERS.

SECTION A.



DETAIL SECTION B.

SCALE FOR DETAILS (5' TO 12').



SECTION C.



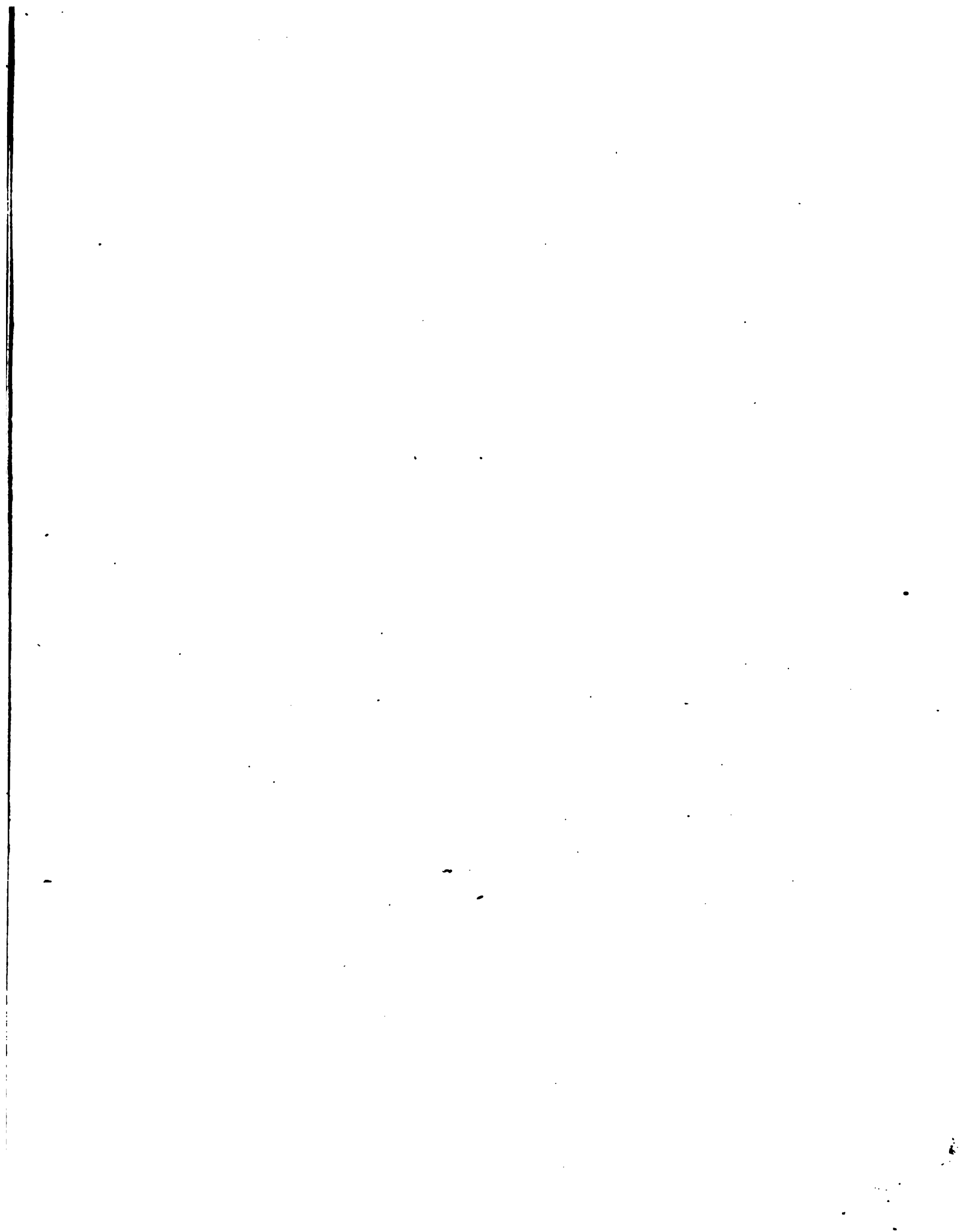
SCALE FOR PLAN, SECTION, AND ELEVATION (3/8" TO 12').

DETAILS OF SLIDING DOORS.

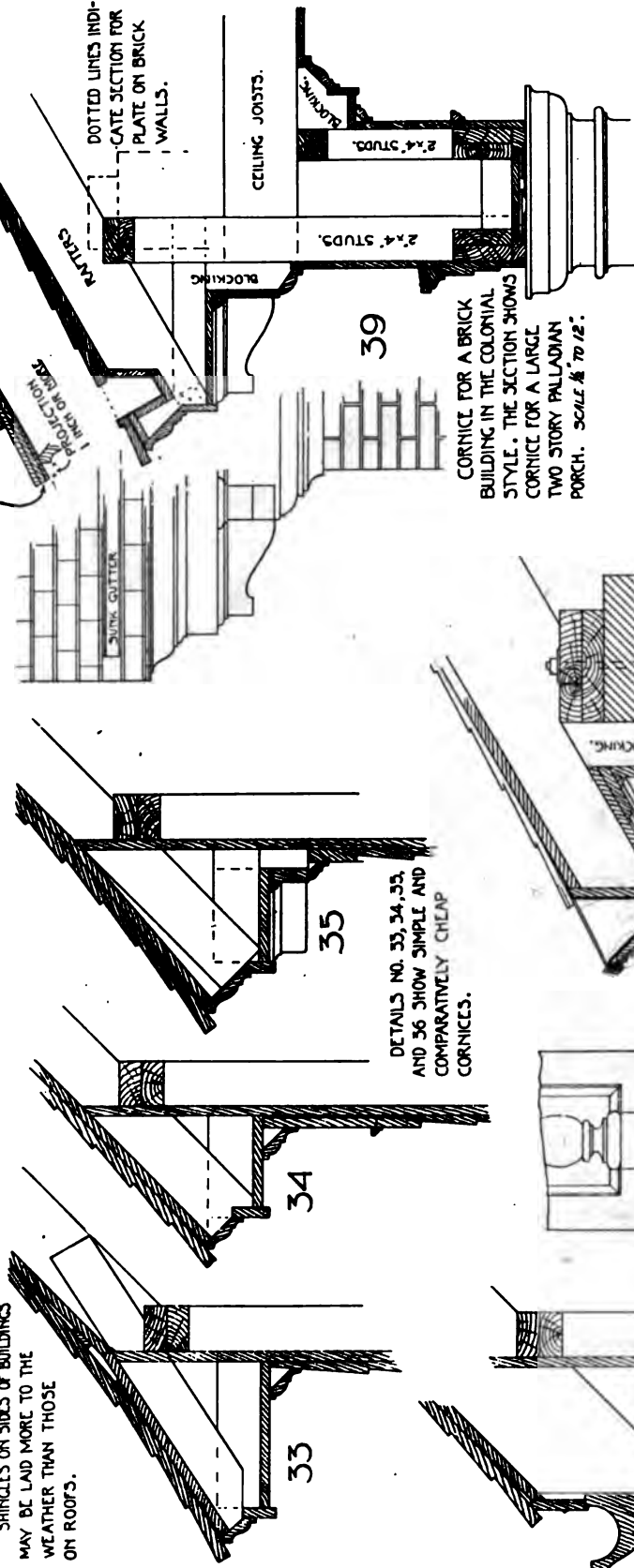
FRAME PARTITIONS FOR ORDINARY SLIDING DOORS VARY FROM 10' TO 15' IN THICKNESS, DEPENDING UPON THE THICKNESS OF THE DOORS AND SIZE OF STUDS. 2' STUDS ARE OFTEN USED, BUT 3' STUDS MAKE A MUCH STIFFER CONSTRUCTION.

POCKETS SHOULD ALWAYS BE LINED AS A PROTECTION FROM DIRT CAUSED BY FALLING BITS OF PLASTER.

SMALL MOLDED RUBBING STRIPS SHOULD ALWAYS BE PUT ALL AROUND THE MARGINS OF SLIDING DOORS SO THAT STILES, RAILS, AND MOLDINGS WILL WORK FREE OF STOPS AND NOT BE MARRED BY ANY SLIGHT WARPING OF DOORS.



WOODEN SHINGLES ARE USUALLY 16", 18", OR 20" LONG, ABOUT 1/4" THICK AT POINTS AND FROM 1/4" TO 1/2" THICK AT BUTTS, ACCORDING TO MAKE AND QUALITY. HAND MADE SHINGLES ARE BEST AND MAY BE MADE TO SPECIAL SIZES IF DESIRED, BUT THEY ARE VERY EXPENSIVE. SHINGLES ON ROOFS SHOULD SHOW LESS THAN 1/3 THE LENGTH OF THE SHINGLE TO THE WEATHER, SAY 48" FOR 16", 54" FOR 18", AND 6" FOR 20" SHINGLES. EAVES SHOULD BE STARTED WITH THREE THICKNESSES, ONE COURSE POINTS AND TWO COURSES FULL SHINGLES, THUS, SHINGLES ON SIDES OF BUILDINGS MAY BE LAID MORE TO THE WEATHER THAN THOSE ON ROOFS.



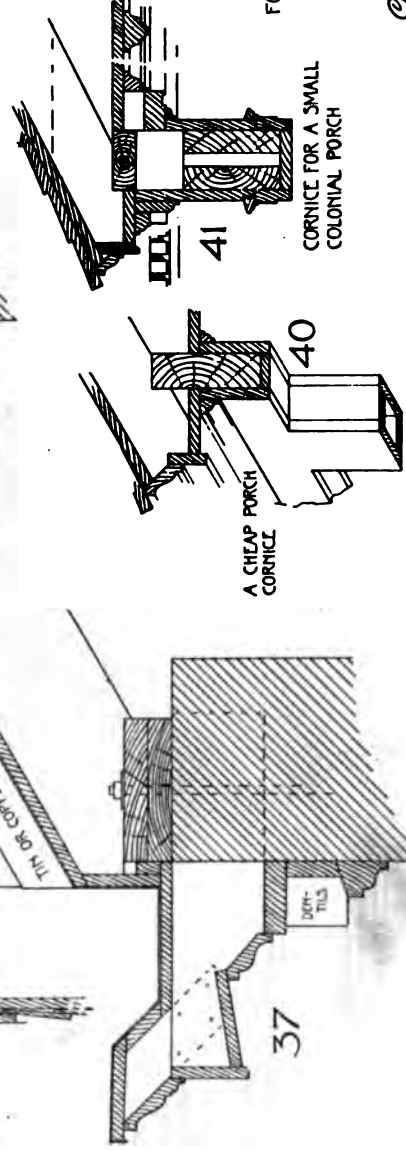
DETAILS NO. 33, 34, 35, AND 36 SHOW SIMPLE AND COMPARATIVELY CHEAP CORNICES.

CORNICE FOR A BRICK BUILDING IN THE COLONIAL STYLE. THE SECTION SHOWS CORNICE FOR A LARGE TWO STORY PALLADIAN PORCH. SCALE 1/4" TO 12".

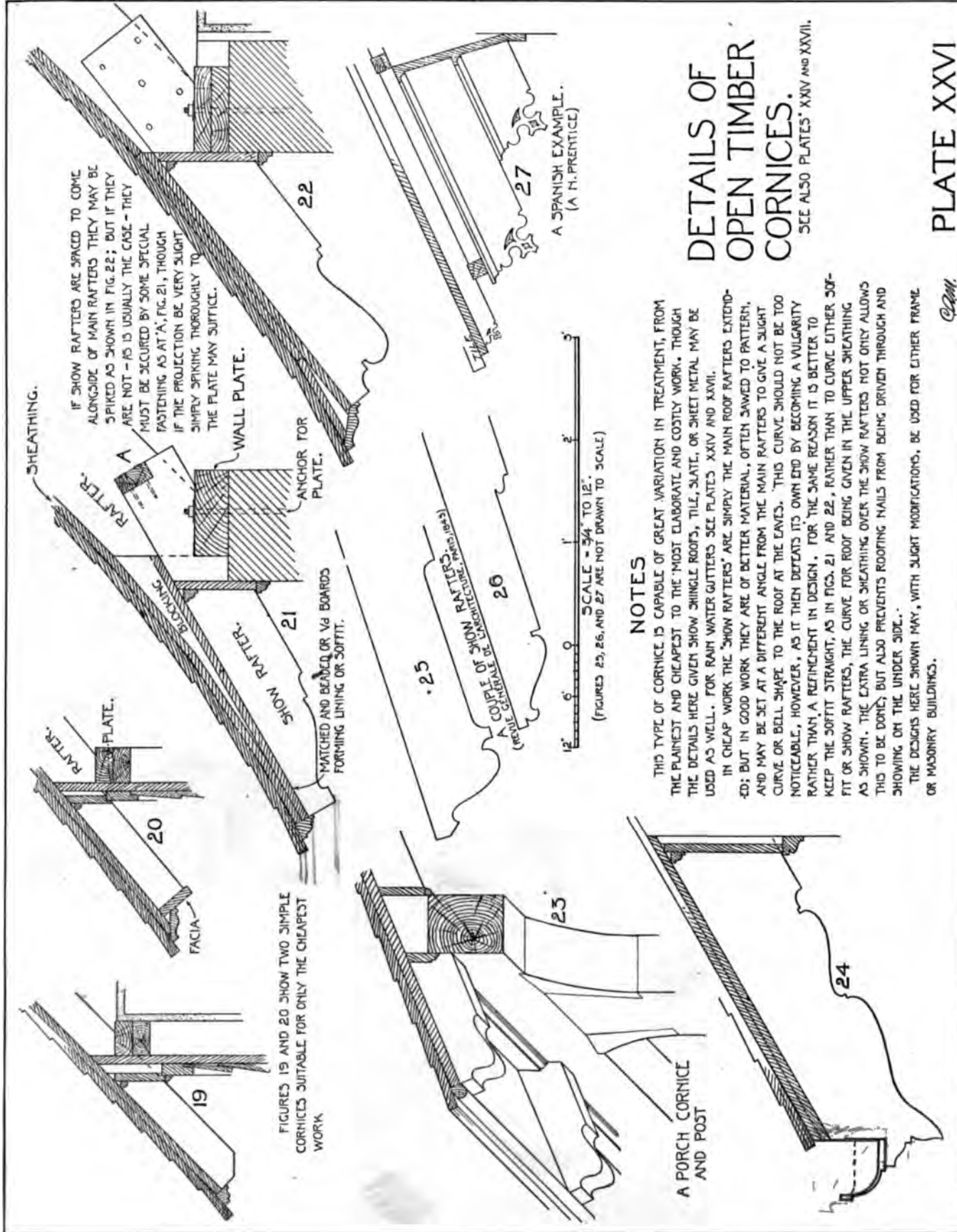
12" 6" 0 1' 2"
SCALE (3/4" TO 12"), EXCEPT FOR DETAIL NO. 39.

DETAILS OF BOX CORNICES

ADAPTABLE, WITH SLIGHT MODIFICATIONS, TO EITHER WOODEN OR MASONRY BUILDINGS.
FOR GUTTER DETAILS SEE PLATES XXIV AND XXVII.





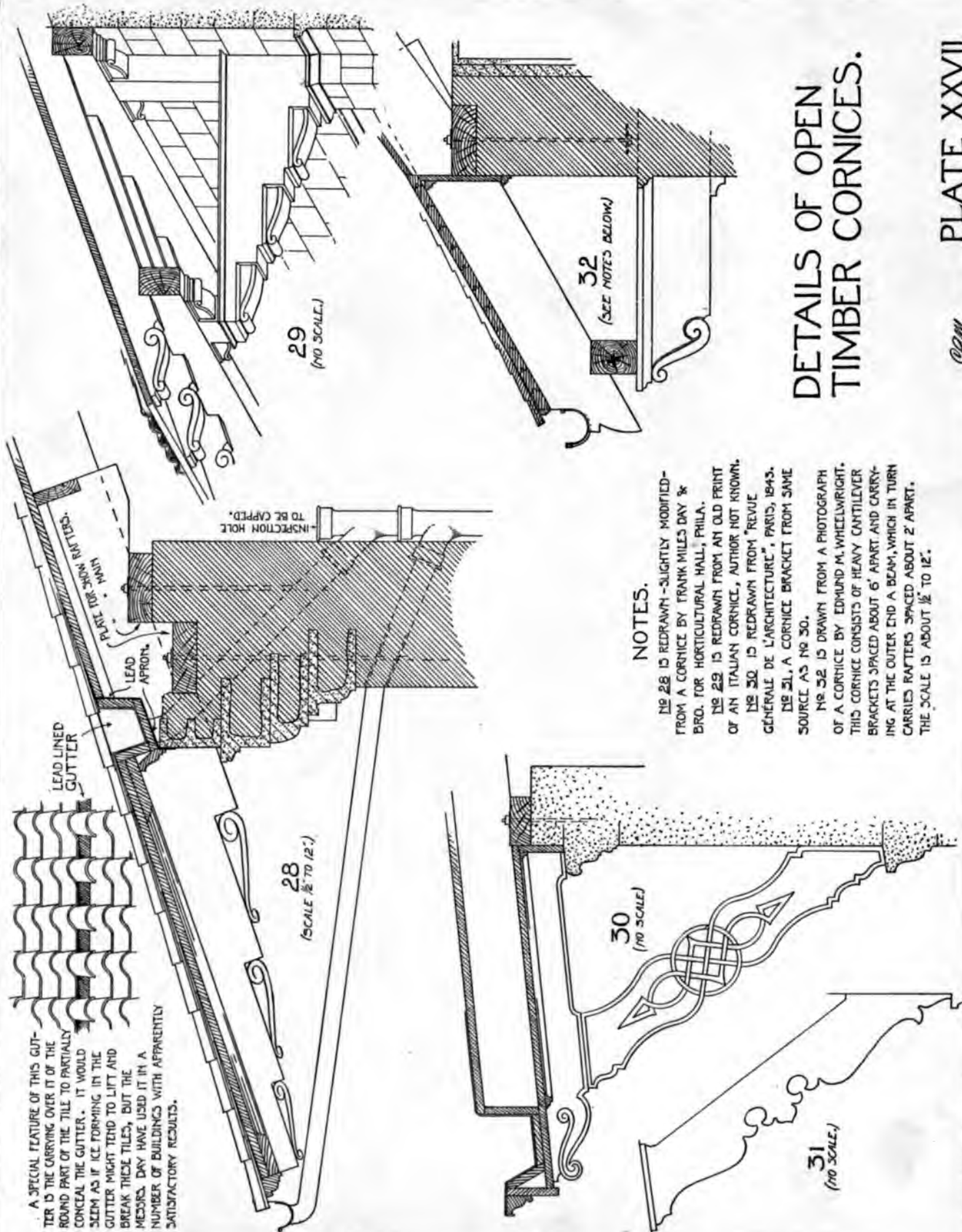


DETAILS OF OPEN TIMBER CORNICES.

SEE ALSO PLATES XXIV AND XXVII.



A SPECIAL FEATURE OF THIS GUTTER IS THE CARRYING OVER IT OF THE ROUND PART OF THE TILE TO PARTIALLY CONCEAL THE GUTTER. IT WOULD SEEM AS IF ICE FORMING IN THE GUTTER MIGHT TEND TO LIFT AND BREAK THESE TILES, BUT THE MESSRS. DAY HAVE USED IT IN A NUMBER OF BUILDINGS WITH APPARENTLY SATISFACTORY RESULTS.

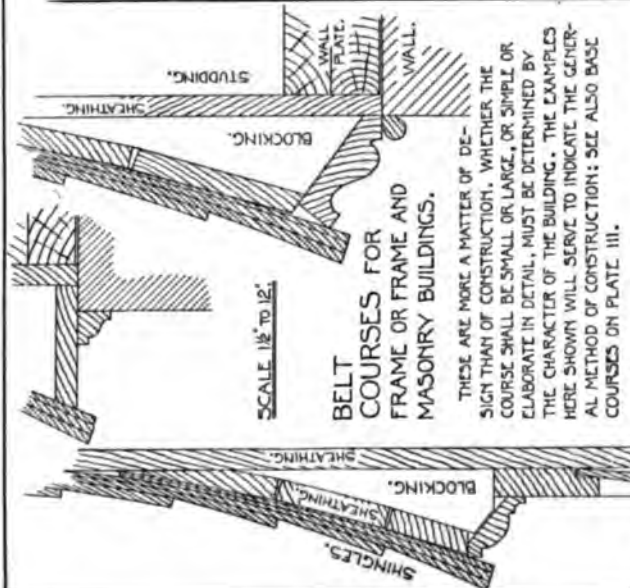


NOTES.

- NO 28 IS REDRAWN - SLIGHTLY MODIFIED - FROM A CORNICE BY FRANK MILES DAY & BRO. FOR HORTICULTURAL HALL, PHILA.
 NO 29 IS REDRAWN FROM AN OLD PRINT OF AN ITALIAN CORNICE, AUTHOR NOT KNOWN.
 NO 30 IS REDRAWN FROM "REVUE GÉNÉRALE DE L'ARCHITECTURE", PARIS, 1943.
 NO 31, A CORNICE BRACKET FROM SAME SOURCE AS NO 30.
 NO 32 IS DRAWN FROM A PHOTOGRAPH OF A CORNICE BY EDMUND M. WHEELWRIGHT. THIS CORNICE CONSISTS OF HEAVY CANTILEVER BRACKETS SPACED ABOUT 6' APART AND CARRYING AT THE OUTER END A BEAM, WHICH IN TURN CARRIES RAFTERS SPACED ABOUT 2' APART. THE SCALE IS ABOUT $\frac{1}{8}$ " TO 12".

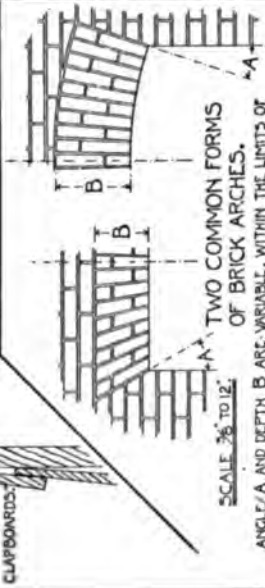
DETAILS OF OPEN TIMBER CORNICES.

CDM. PLATE XXVII



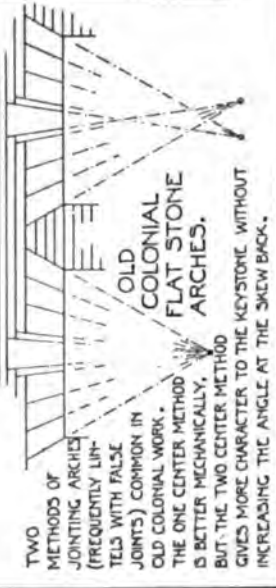
BELT COURSES FOR FRAME OR MASONRY BUILDINGS.

THESE ARE MORE A MATTER OF DESIGN THAN OF CONSTRUCTION. WHETHER THE COURSE SHALL BE SMALL OR LARGE, OR SIMPLE OR ELABORATE IN DETAIL, MUST BE DETERMINED BY THE CHARACTER OF THE BUILDING. THE EXAMPLES HERE SHOWN WILL SERVE TO INDICATE THE GENERAL METHOD OF CONSTRUCTION; SEE ALSO BASE COURSES ON PLATE III.



TWO COMMON FORMS OF BRICK ARCHES.

ANGLE A AND DEPTH B ARE VARIABLE, WITHIN THE LIMITS OF THE MATERIAL, AT THE OPTION OF THE DESIGNER. SOME BRICK-MAKERS MAKE BRICKS OF SPECIAL SHAPES AND SIZES FOR ARCHES, BUT MOST OF THEM DO NOT; THEREFORE IT IS USUALLY BEST TO DESIGN BRICK ARCHES SO THAT THEY CAN BE BUILT OF BRICKS GROUND TO SHAPE FROM STOCK SIZES. FLAT ARCHES SHOULD HAVE THE SOFFIT CAMBERED ABOUT $\frac{1}{8}$ " OR $\frac{3}{16}$ " FOR EACH FOOT OF SPAN.



TWO METHODS OF JOINTING ARCHES.

(FREQUENTLY UN- TELS WITH FALSE JOINTS) COMMON IN OLD COLONIAL WORK. THE ONE CENTER METHOD IS BETTER MECHANICALLY, BUT THE TWO CENTER METHOD GIVES MORE CHARACTER TO THE KEYSTONE WITHOUT INCREASING THE ANGLE AT THE SKEW BACK.

HALF TIMBER CONSTRUCTION. USUALLY IN EUROPE THE TIMBER FORMS THE REAL CONSTRUCTION, FILLED IN AND BACKED UP WITH BRICK WHICH IS COMMONLY PLASTERED ON THE OUTSIDE FLUSH WITH THE TIMBERS. IN THIS COUNTRY THE TIMBERS ARE NOT STRUCTURAL, ARE USED FOR EFFECT ONLY, AND ARE USUALLY MADE TO PROJECT FROM $\frac{1}{8}$ " TO $\frac{1}{4}$ " FROM THE FACE OF PLASTER.

SHAM HALF TIMBER WORK.

TIMBERS MAY BE 1", $1\frac{1}{4}$ ", $1\frac{1}{2}$ ", OR 2" THICK, AND ARE USUALLY LEFT ROUGH. WOODEN LATHING IS SOMETIMES USED BUT EXPANDED METAL OR WOVEN WIRE IS MUCH BETTER. "PLASTER BOARD" IS GOOD AND FINISHES WITH ONE COAT OF PLASTER. ALL LATHING REQUIRES FURRING TO GIVE CLINCH FOR PLASTER: WOOD FURRING FOR WOODEN LATH; AND WOOD, $\frac{1}{4}$ " ROUND IRON, OR SMALL V SHAPED IRON FOR METAL LATH. SHEATHING SHOULD ALWAYS BE COVERED WITH GOOD BUILDING PAPER BEFORE LATHING. PLASTER IS OFTEN FINISHED AS ROUGH CAST OR PEBBLE DASH.

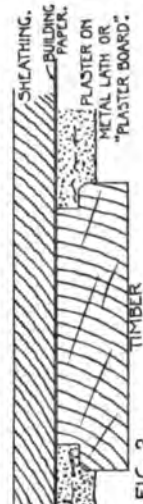


FIG. 1.

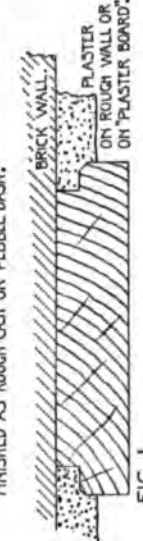


FIG. 2.

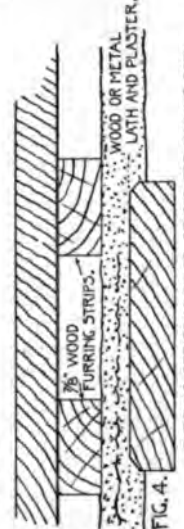


FIG. 3.

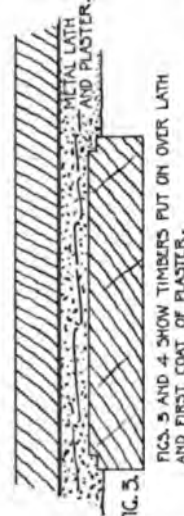
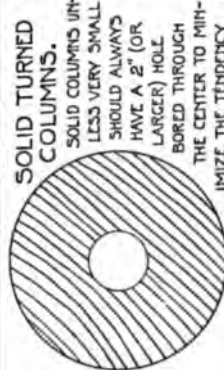


FIG. 4.

FURRING STRIPS MUST BE SPACED FOR NAILING BOTH LATHING AND TIMBERS.

SCALE: 3" TO 12"



SOLID TURNED COLUMNS.

SOLID COLUMNS UNLESS VERY SMALL SHOULD ALWAYS HAVE A 2" (OR LARGER) HOLE BORED THROUGH THE CENTER TO MINIMIZE THE TENDENCY TO CHECK. THE PRACTICAL LIMIT OF DIAMETER FOR SOLID TURNED SHAFTS IS BETWEEN 10 AND 12 INCHES, AS UNLESS CUT FROM TIMBER ENTIRELY OUTSIDE THE HEART OF THE LOG, THEY WILL CHECK BADLY IN SPITE OF ALL PRECAUTIONS.

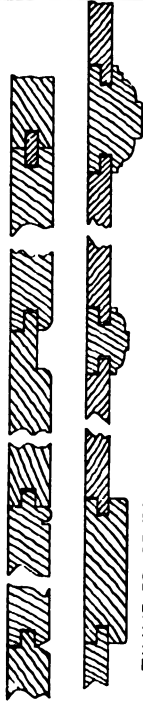


LARGE WOODEN COLUMNS.

COLUMNS 12" OR MORE IN DIAMETER SHOULD BE STAVED UP AS HERE SHOWN. 2", 2 1/2", OR 3" POPLAR OR WHITE PINE PLANKS ARE USED AND THEY SHOULD BE THOROUGHLY KILN DRIED AND GLUED AND SPLICED UP IN THE BEST POSSIBLE MANNER. THE ROUGH SHAFT SHOULD BE TAPERED AS SHOWN BY EXAGGERATED DIAGRAM AT THE RIGHT, IN ORDER THAT THE WOOD MAY NOT BE TURNED TOO THIN AT THE TOP IN GIVING ENTASIS TO THE COLUMN AND THAT THE APPOHYGES AT TOP AND BOTTOM MAY BE PROPERLY TURNED ON THE SHAFT.

IN FLUTED COLUMNS IT IS NOT NECESSARY TO PLACE JOINTS WITH REFERENCE TO FLUTES, AS THEY SHOULD BE SO WELL MADE AS TO BE PERFECTLY TIGHT WHEREVER THEY MAY COME. THE FLUTES MUST NOT BE TOO DEEP OR THEY WILL CUT TOO NEARLY THROUGH THE WOOD AT TOP AND BASE OF SHAFT. IN THE DETAIL ABOVE THE WOOD IS SHOWN AT ITS THICKEST POINT, BUT AT THE BASE THE TAPER OF SHAFT AND INCLINATION OF STAVES BRING THE FLUTES IN VERY NEARLY TO THE SPLINES IN THE JOINTS. BUILT UP COLUMNS MAY BE MADE OF ALMOST ANY SIZE, BUT THEIR MAKING SHOULD BE ENTRUSTED ONLY TO THOSE WHO HAVE SPECIAL FACILITIES FOR DOING THE WORK PROPERLY. THE DETAIL ABOVE SHOWS A COLUMN 22" IN DIAMETER STAVED UP IN 20 PIECES. A 12" COLUMN WOULD REQUIRE ONLY 8 STAVES.

MISCELLANEOUS EXTERIOR DETAILS.



EXAMPLES OF TONGUED AND GROOVED WAJNSCOTING.
SIMPLE MATCHED AND V-D OR BEADED BOARDS (FIRST TWO EXAMPLES) FROM 3 TO 4 INCHES
WIDE ARE CHEAPEST; $\frac{1}{2}$ " BOARDS WITH THICKER GROOVED PIECES HAVING THE EFFECT OF
BATTENS (LAST 3 EXAMPLES) ARE NEXT IN COST; AND THE PANELED WORK IS THE MOST
EXPENSIVE AND BY FAR THE BEST BOTH FOR DESIGN AND CONSTRUCTION.

PANELING.

SEE ALSO DOOR DETAILS, PLATE XXII.

A ORDINARY CONSTRUCTION, MOLDINGS RUN SOLID
ON FRAME WORK OF PANELING.

B MOLDINGS RUN ON FRAME WORK BUT PANELS SET
IN FROM BACK AFTER BEING FINISHED. WITH THIS
CONSTRUCTION SHRINKAGE OF PANELS DOES NOT AFFECT
STRENGTH OR APPEARANCE OF THE WORK.

C A WRONG BUT VERY COMMON CONSTRUCTION.
MOLDING IS NAILED TO PANEL AND SHRINKAGE OF PANEL
DISTORTS OR SPLITS WORK AND OPENS JOINTS.

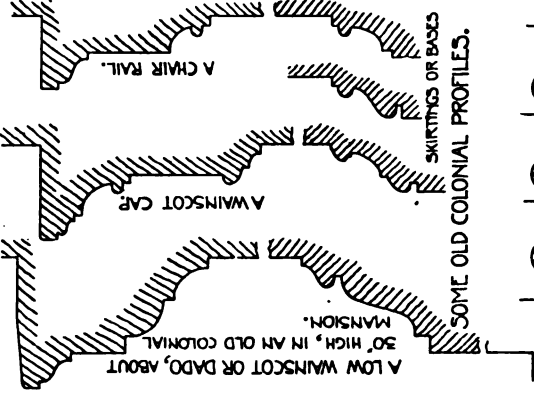
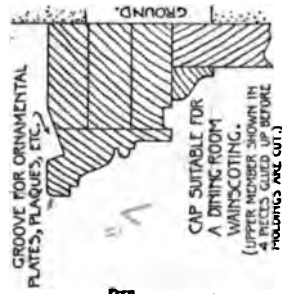
D THE SAME FORM OR DESIGN AS C BUT WITH MUCH
BETTER CONSTRUCTION. MOLDING SHOULD BE GLUED
TO FRAME AND PANELS SET IN FROM BACK AS AT B.

E THE BEST CONSTRUCTION FOR MOLDED PANEL WORK
THAT IS TO SHOW ON BOTH SIDES, AS FOR DOORS, ETC.
SEE DOOR DETAILS, PLATE XXII.

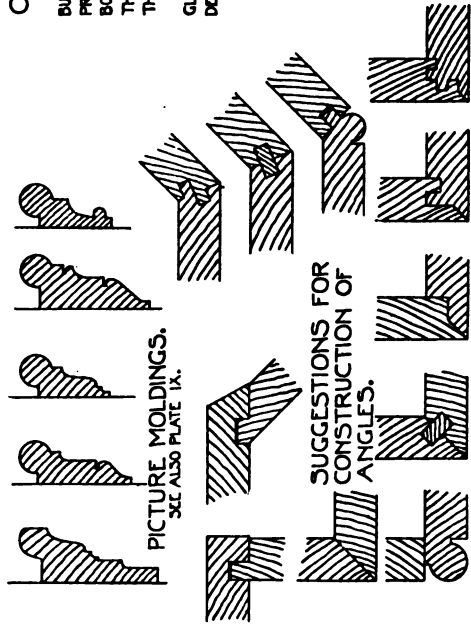
F AND G SHOW TWO CONSTRUCTIONS
FOR PANELS WITH RAISED MOLDINGS.
F IS THE BETTER AS IT ALLOWS MOLDING
TO BE GLUED AND MORE FIRMLY FASTENED TO
FRAME AND AT THE SAME TIME LEAVES THE PANEL
FREE AS IN B. IF MOLDING IN G IS FASTENED AS
SHOWN IT IS LIKELY TO WARP AWAY FROM PANEL,
AND IF FASTENED TO PANEL IT IS AS BAD AS EXAMPLE C.

H PANELS THEMSELVES MAY BE PERFECTLY PLAIN OR THEY MAY BE RAISED,
MOLDED, CARVED, OR OTHERWISE ORNAMENTALLY TREATED. THE MOLDINGS AROUND
MAY BE CARVED IF THE QUALITY OF WORK IS GOOD ENOUGH, BUT NONE OF THE
EXAMPLES SHOWN ABOVE IS HEAVY ENOUGH FOR SUCCESSFUL CARVING EXCEPT FOR
VERY MINUTE WORK.

LARGE PANELS SHOULD BE OF VENEER CONSTRUCTION IN 3" THICKNESSES, AS 12" IS
ABOUT THE LIMIT OF WIDTH FOR SATISFACTORY WORK WITH SOLID PANELS.



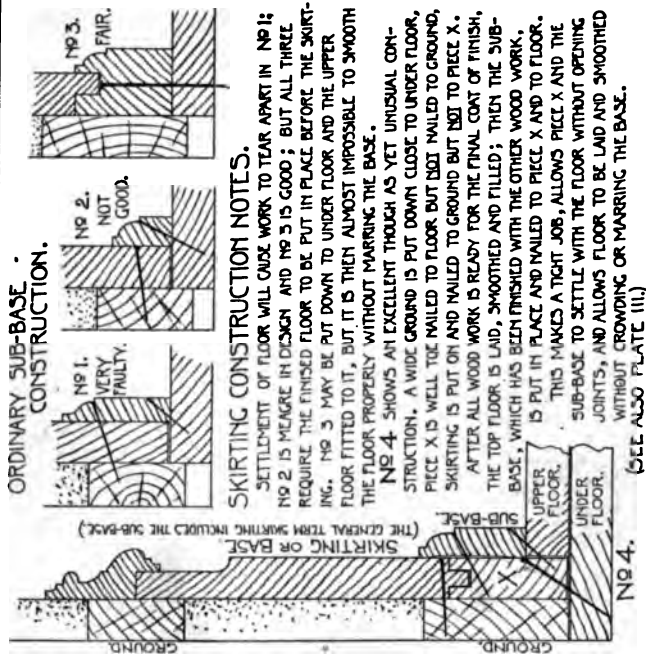
SOME OLD COLONIAL PROFILES.



PICTURE MOLDINGS.
SEE ALSO PLATE IX.

SUGGESTIONS FOR
CONSTRUCTION OF
ANGLES.

1" 2" 3" 4" 5" 6" 7" 8" 9" 10" 11"
SCALE, - 5" TO 12"



ORDINARY SUB-BASE
CONSTRUCTION.

SKIRTING CONSTRUCTION NOTES.

SETTLEMENT OF FLOOR WILL CAUSE WORK TO TEAR APART IN NO 1;
NO 2 IS MEANRE IN DESIGN AND NO 3 IS GOOD; BUT ALL THREE
REQUIRE THE FINISHED FLOOR TO BE PUT IN PLACE BEFORE THE SKIRT-
ING. NO 3 MAY BE PUT DOWN TO UNDER FLOOR AND THE UPPER
FLOOR FITTED TO IT, BUT IT IS THEN ALMOST IMPOSSIBLE TO SMOOTH
THE FLOOR PROPERLY WITHOUT MARRING THE BASE.

NO 4 SHOWS AN EXCELLENT THOUGH AS YET UNUSUAL CON-
STRUCTION. A WIDE GROUN IS PUT DOWN CLOSE TO UNDER FLOOR,
PIECE X IS WELL TUE NAILED TO FLOOR BUT NOT NAILED TO GROUN,
SKIRTING IS PUT ON AND NAILED TO GROUN BUT NOT TO PIECE X.
AFTER ALL WOOD WORK IS READY FOR THE FINAL COAT OF FINISH,
THE TOP FLOOR IS LAID, SMOOTHED AND FILLED; THEN THE SUB-
BASE, WHICH HAS BEEN FINISHED WITH THE OTHER WOOD WORK,
IS PUT IN PLACE AND NAILED TO PIECE X AND TO FLOOR.
THIS MAKES A TIGHT JOB, ALLOWS PIECE X AND THE
SUB-BASE TO SETTLE WITH THE FLOOR WITHOUT OPENING
JOINTS, AND ALLOWS FLOOR TO BE LAID AND SMOOTHED
WITHOUT CROWDING OR MARRING THE BASE.
(SEE ALSO PLATE III.)

PLINTH BLOCKS, ARCHITRAVES, ETC.

ARCHITRAVES FOR DOORS MAY REST ON PLINTH BLOCKS (SEE PLATE XXIII) TO AVOID
CARRYING FINE MOLDINGS TO THE FLOOR AND TO GIVE ADDITIONAL THICKNESS AGAINST
WHICH TO STOP SKIRTING. AS ARCHITRAVES, WAINSCOTINGS, CHAIR RAILS, AND SKIRT-
INGS MEET IN CONSTRUCTION, EACH ONE SHOULD BE DESIGNED WITH REFERENCE TO THE
OTHERS THAT THEY MAY JOIN PROPERLY.

CORNICES, FALSE BEAMS, ETC.

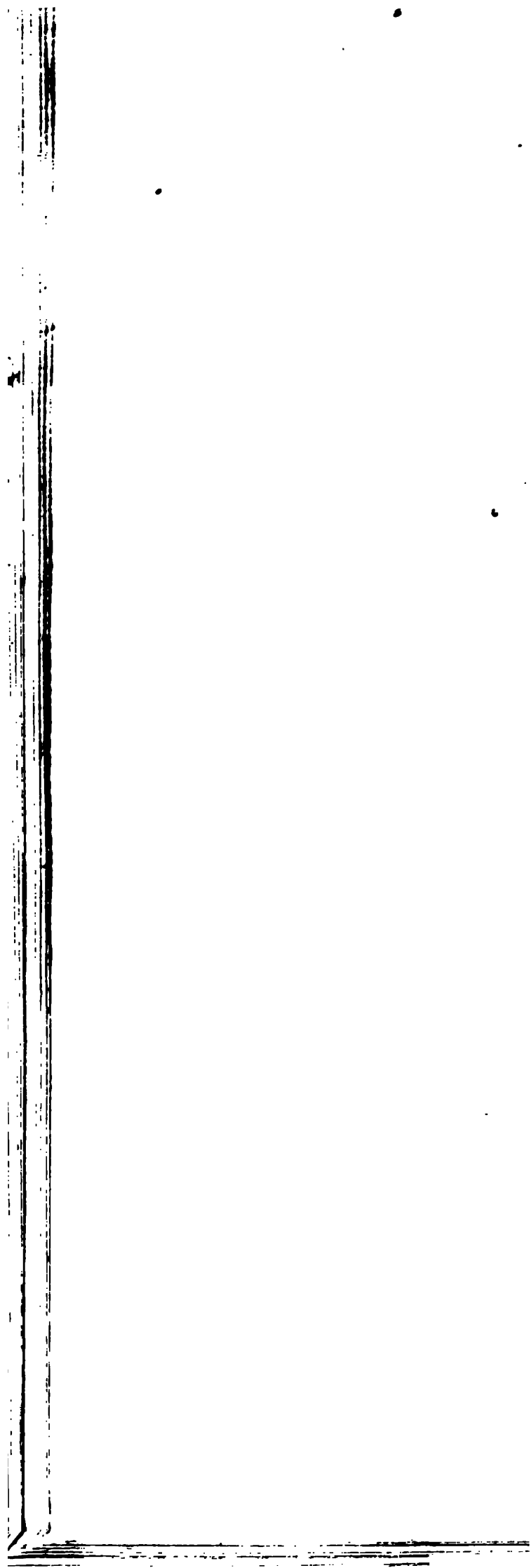
THIS WORK IS OFTEN DONE IN PLASTER AND DECORATED;
BUT IF OF WOOD, IT IS BEST FIRST TO DRAW THE SECTION IN
PROFILE, THEN TO DRAW IN THE CONSTRUCTION, USING $\frac{3}{8}$ "
BOARDS AS FAR AS POSSIBLE. BOARDS 1 $\frac{1}{2}$ ", 1 $\frac{3}{4}$ ", AND 1 $\frac{1}{2}$ "
THICK MAY BE USED BUT IT IS MORE DIFFICULT TO GET
THE THICKER LUMBER WELL SEASONED.
IN ALL GOOD INTERIOR WORK BOARDS MAY BE SPLINED,
GLUED UP AND MOLDED OR WORKED TO ALMOST ANY
DESIRED FORM.

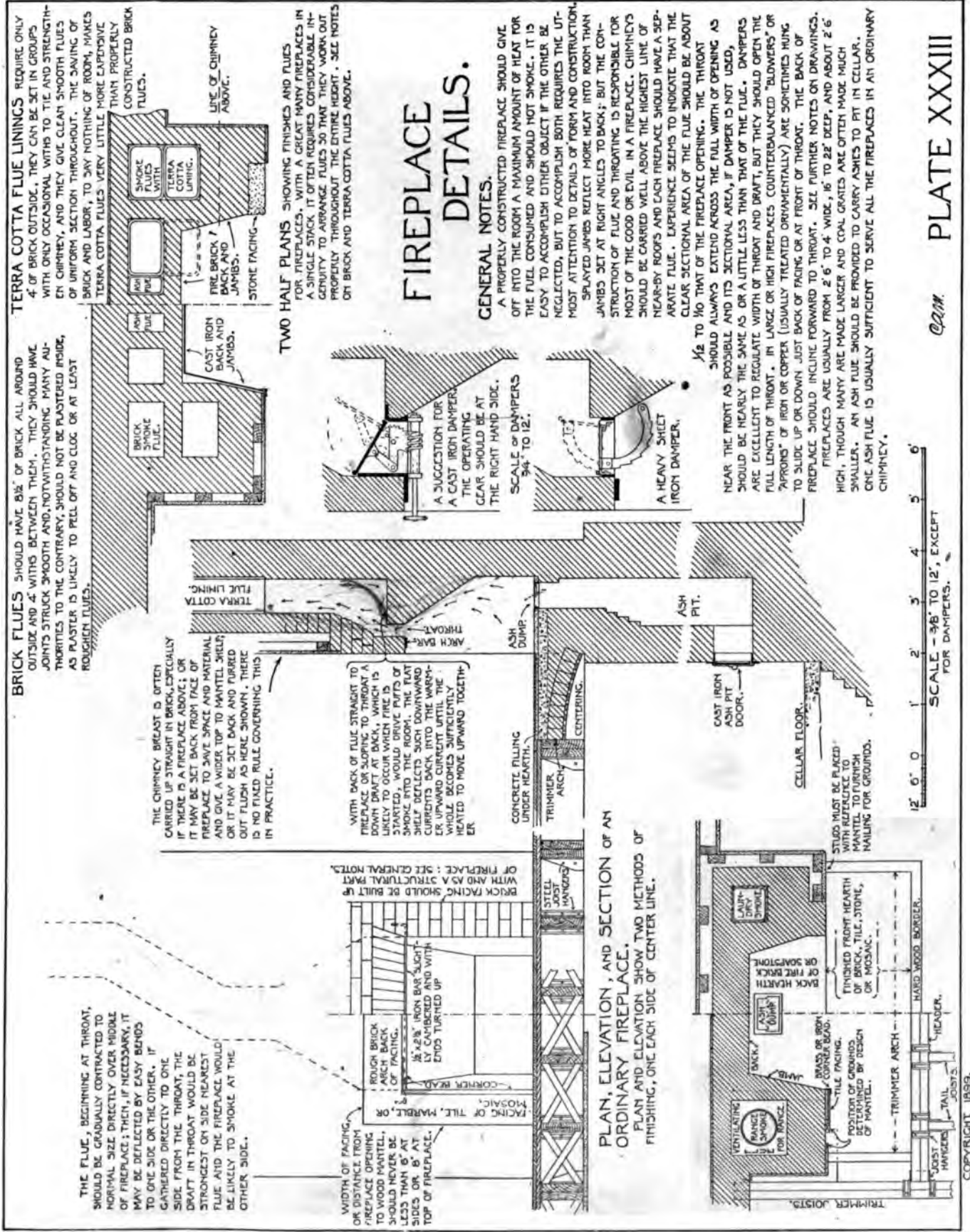
GENERAL INTERIOR FINISH.

SEE ALSO PLATE XXIX.

PLATE XXX







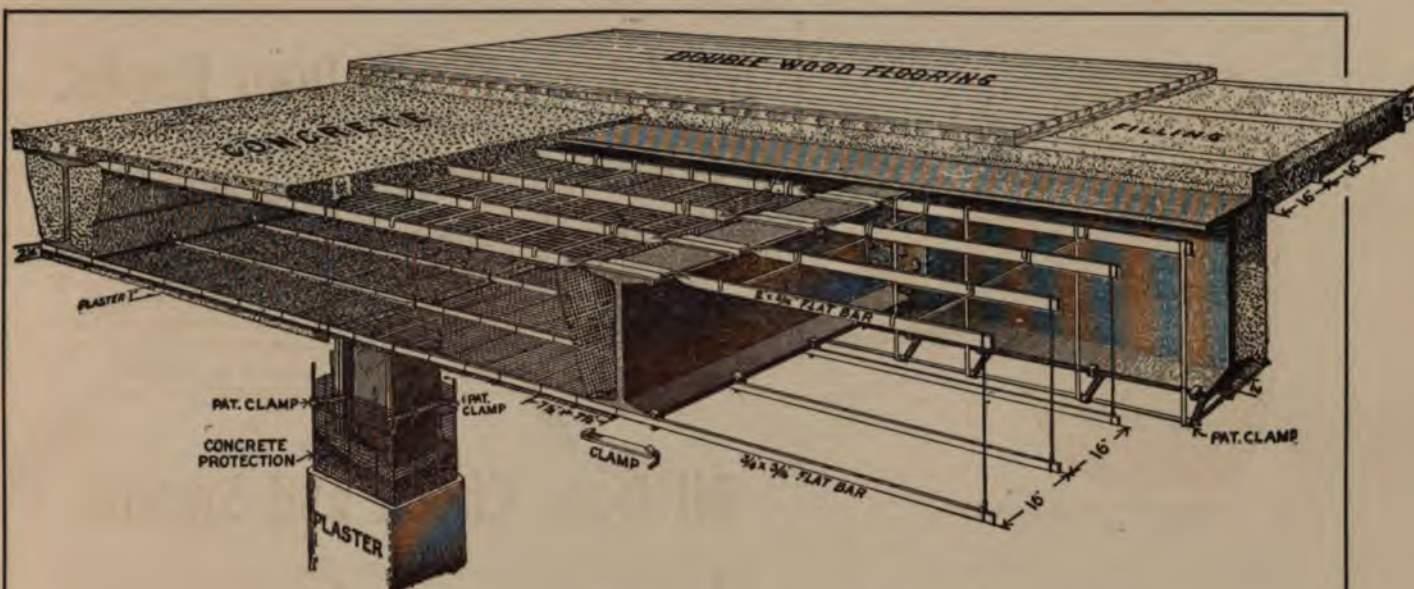
FIREPLACE DETAILS.

GENERAL NOTES. A PROPERLY CONSTRUCTED FIREPLACE SHOULD GIVE OFF INTO THE ROOM A MAXIMUM AMOUNT OF HEAT FOR THE FUEL CONSUMED AND SHOULD NOT SMOKE. IT IS EASY TO ACCOMPLISH EITHER OBJECT IF THE OTHER BE NEGLECTED, BUT TO ACCOMPLISH BOTH REQUIRES THE MOST ATTENTION TO DETAILS OF FORM AND CONSTRUCTION. SPRAWLED JAMBS REFLECT MORE HEAT INTO ROOM THAN JAMBS SET AT RIGHT ANGLES TO BACK; BUT THE CONSTRUCTION OF FLUE AND THROATING IS RESPONSIBLE FOR MOST OF THE GOOD OR EVIL IN A FIREPLACE. CHIMNEYS SHOULD BE CARRIED WELL ABOVE THE HIGHEST LINE OF NEAR-BY ROOFS AND EACH FIREPLACE SHOULD HAVE A SEPARATE FLUE. EXPERIENCE SEEMS TO INDICATE THAT THE CLEAR SECTIONAL AREA OF THE FLUE SHOULD BE ABOUT 1/2 TO 3/4 OF THE FIREPLACE OPENING. THE THROAT SHOULD ALWAYS EXTEND ACROSS THE FULL WIDTH OF OPENING AS NEAR THE FRONT AS POSSIBLE AND ITS SECTIONAL AREA, IF DAMPER IS NOT USED, SHOULD BE NEARLY THE SAME AS OR A LITTLE LESS THAN THAT OF THE FLUE. DAMPERS ARE EXCELLENT TO REGULATE WIDTH OF THROAT AND DRAFT, BUT THEY SHOULD OPEN THE FULL LENGTH OF THROAT. IN LARGE OR HIGH FIREPLACES COUNTERBALANCED "BLOWERS" OR "APRONS" OF IRON OR COPPER (USUALLY TREATED ORNAMENTALLY) ARE SOMETIMES HUNG TO SLIDE UP OR DOWN JUST BACK OF FACING OR AT FRONT OF THROAT. THE BACK OF FIREPLACE SHOULD INCLINE FORWARD TO THROAT. SEE FURTHER NOTES ON DRAWINGS. FIREPLACES ARE USUALLY FROM 2' 6" TO 4' WIDE, 16" TO 22" DEEP, AND ABOUT 2' 6" HIGH. THOUGH MANY ARE MADE LARGER AND COAL GRATES ARE OFTEN MADE MUCH SMALLER. AN ASH FLUE SHOULD BE PROVIDED TO CARRY ASHES TO PIT IN CELLAR. ONE ASH FLUE IS USUALLY SUFFICIENT TO SERVE ALL THE FIREPLACES IN AN ORDINARY CHIMNEY.



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Speed of erection, absence of wood centering, the safety afforded the workmen by the wire centering, ceilings that will not crack or discolor the plaster work, lightness and economy, are distinctive features of this system.

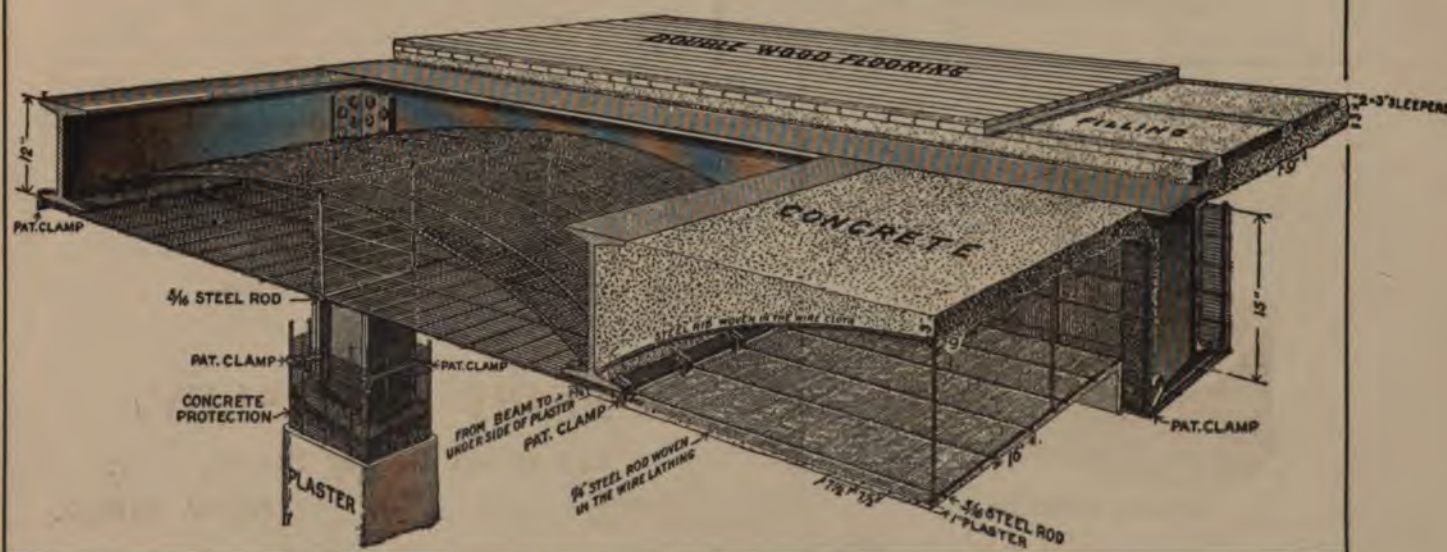
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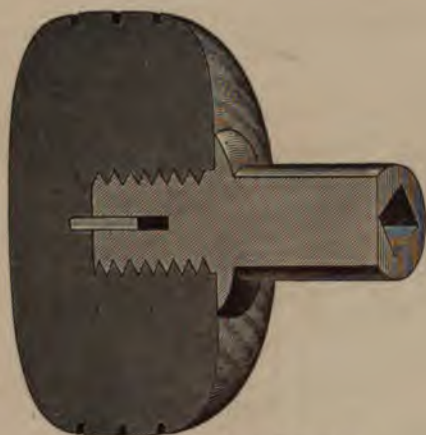
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OIL DOOR CHECK AND SPRING.



CHECKING SPRING HINGES.

Bardsley's Wood Door Knobs.

THESE are carefully made of selected thoroughly dried material. Their beautiful and durable finish, attractive appearance, and pleasant feeling to the hand make them the most desirable knobs for dwellings. They can be matched with any interior finish, as they are made in all the woods used for that purpose.

This illustration shows our patented method of fastening the shank to the head of the knob. Before inserting the shank the flat metal key is down to the end of the slot and even with the end of the shank. After the shank has been screwed into its place the key is forced partly into the wood and locks the shank. Every knob is warranted not to get loose or give out in any way.

These Knobs are made in two grades. The higher grade has the name "BARDSLEY" stamped on every shank. The genuine goods can thus be told.



Oil Door Check and Spring.

THIS device, in its improved form, embodies some new and valuable features suggested by the experience of several years in manufacturing this class of goods. Among these may be mentioned the following:—

- Freedom from Packing Friction.**
- The Spring Cannot be Used the Wrong Way Up**, and thus get bent out of shape and perhaps broken, a frequent occurrence heretofore.
- A Lighter, Longer, and More Elastic Spring is Used**, giving greater durability.
- The Checking Power Cannot be Lost** through the liquid being forced from the liquid chamber into the spring chamber, as the two are connected by openings.
- A Reserve Oil Chamber** is provided between the spring chamber and checking cylinder, holding a supply of oil sufficient to last many years.
- More Oil can be Added** when needed without removing the Check from the door.
- It has a Releasing Device**, by means of which the checking power is removed when the door is nearly closed, the spring thus exerting its full force to latch the door.

It may be Readily Taken Entirely Apart.



Checking Spring Hinges.

FOR SWING DOORS

THESE Double Acting Spring Hinges are especially adapted to Banks, Churches, Public Buildings, Butler's Pantries, and all doors where automatic closing, combined with gentle, silent action, is desirable. Many thousands are now in use. The mechanism is entirely of metal, very strong, simple, and durable, contained in a closed iron casing covered with a brass plate let into the floor or sill, under the door. The casing is nearly filled with a specially prepared non-freezing oil, which serves as a checking medium as well as lubricant.

These hinges possess the following advantages:—

- They do not swing the door violently**, but close it gently and without noise, and stop it at once at the centre.
- There are no unsightly projections on the door or frame.**
- The springs are not twisted**, but compressed, and do not break or set.
- The door cannot sag**, being hung on pivots.
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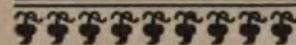
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Fine Builders' Hardware

In Harmony with All Prominent Styles of Architecture

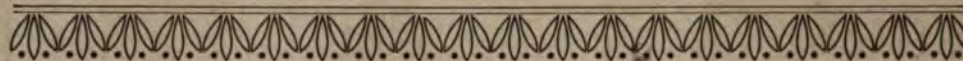
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The Norris Patent Sash Pulley.

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The Sash Cord Sizes are:—

Size No. 6, diameter, 3-16 in. About 18 lbs. per dozen. About 66 ft. per lb. Suitable for weights of less than 10 lbs.
Size No. 7, diameter, 7-32 in. About 22 lbs. per dozen. About 55 ft. per lb. Suitable for weights from 10 to 15 lbs.
Size No. 8, diameter, 1-4 in. About 27 lbs. per dozen. About 44 ft. per lb. Suitable for weights from 15 to 25 lbs.
Size No. 9, diameter, 9-32 in. About 33 lbs. per dozen. About 36 ft. per lb. Suitable for weights from 25 to 35 lbs.
Size No. 10, diameter, 5-16 in. About 40 lbs. per dozen. About 30 ft. per lb. Suitable for weights from 35 to 45 lbs.
Size No. 12, diameter, 3-8 in. About 58 lbs. per dozen. About 21 ft. per lb. Suitable for weights heavier than 45 lbs.
It is put up in hanks of 100 ft. each (two connected), one dozen hanks (1,200 ft.) in package, or in coils of any length desired.

**SAMSON CORDAGE WORKS,
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Window Stop Adjuster.



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FLUSH HINGE.



THIS Hinge is made of malleable iron and steel. It is easy to put on, strong and durable, and cannot blow off. It can be taken off at right angles by removing the pin. The independent anti-friction steel collar has an extra nut to tighten and make more tension on the spring when required. In use there is no wear to angles, no grating sound, or rattle, or slamming, and no interference when used on surface blinds. The Hinge invariably screws into the center of the jamb. No fixtures other than those for regular hinges are required for use on brick or wood buildings. The blinds will stay half open, an advantage that will be appreciated by those having bay-

windows, windows near piazza posts, etc. The Hinge is so made that the bracket can be taken off the Hinge and fastened to window frame of a brick house, where there is a staff bead, and then the Hinge is screwed into place. Four Hinges make a complete set of blind trimmings. By removing the split pin they can be made right or left. The No. 1 Surface Hinge for brick buildings throws the blind out 4 inches, No. 2 throws the blind out 4 1/2 inches, and the No. 3 throws the blind out 5 1/2 inches from window frame when the blind is open. The No. 1 Flush Hinge for brick buildings throws the blind out 3 1/2 inches, No. 2 throws blind out 4 1/2 inches, and No. 3 throws blind out 6 inches from window frame when blind is open.

SURFACE HINGE.



Circular and Price-List on Application.

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Blind Down, Slats Closed.



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Blind pulls up and sides fold in compactly. Bronze Metal Tapes and Cords. Non-corroding. Everlasting.

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END-WOOD MOSAIC,
THIN PARQUETRY AND WOOD CARPET,
THICK PARQUETRY,
PLAIN STRIP FLOORS.

END-WOOD MOSAIC is made of small blocks of wood seven-eighths inch thick, set on end, joined by a lead tongue. It is the most durable of parquetry floors, and its cost is relatively high.

WOOD CARPET is five-sixteenths inch thick, made of strips of wood (generally oak), glued to strong cloth, in pieces from 24x36 inches down according to pattern. It is laid by nailing through the surface with small steel brads.

THIN PARQUETRY, made like wood carpet, but in a large variety of woods and designs.

THICK PARQUETRY is seven-eighths inch thick, and is made in two ways, solid and veneered. The former is made of wood, the full thickness joined by tongue-and-groove. The latter is made of thin parquetry glued to a paneled backing. In both the separate sections are laid with tongue-and-groove joints. Plain fields are best solid, while complicated designs stand best when veneered.

We make a great variety of patterns, and are constantly adding new designs. We use only thoroughly seasoned kiln-dried lumber, and guarantee materials and workmanship.

Designs and estimates furnished on application. Send for catalogue of designs.



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✱ Possesses every good feature of the best gravity locking blind hinge and has

**TWO STRONG
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FIRST. When the blind is open, screens or storm sash slip into the opening without mutilating.

SECOND. The Ideal is provided with guide lugs to line it by when applying.

AGAIN. It is a strong, symmetrical pattern, with positive locking construction, avoiding all possibility of the blind rattling, or getting away from its position when open.

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Cabot's Insulating and Deadening Quilt.



SCIENTIFIC non-conductor of heat and sound. Not a mere felt or paper, but a soft resilient cushion of dead air spaces, giving the most perfect conditions for heat insulation or the absorption of sound waves. Indestructible by moths, vermin, or decay, and unflammable.

ASBESTOS-QUILT, the only sheathing made that is heat, sound, and fire-proof.

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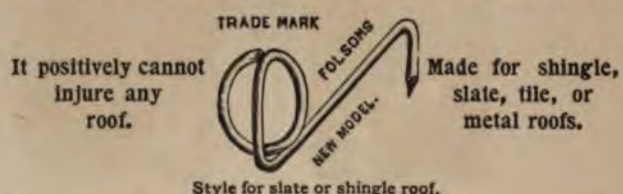
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roof.

Made for shingle,
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Style for slate or shingle roof.

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AN improvement in every way over the old style side sash pulley. Unequalled for mullion windows as illustrated on VII. and XI. of this book, for all weights can be hung in side pockets, dispensing with pockets in the mullions. Special patterns made for such windows. The Shull pulley has been put in many of the largest buildings. Over 800 dozen were used in the Park Row Syndicate Building, New York.

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